

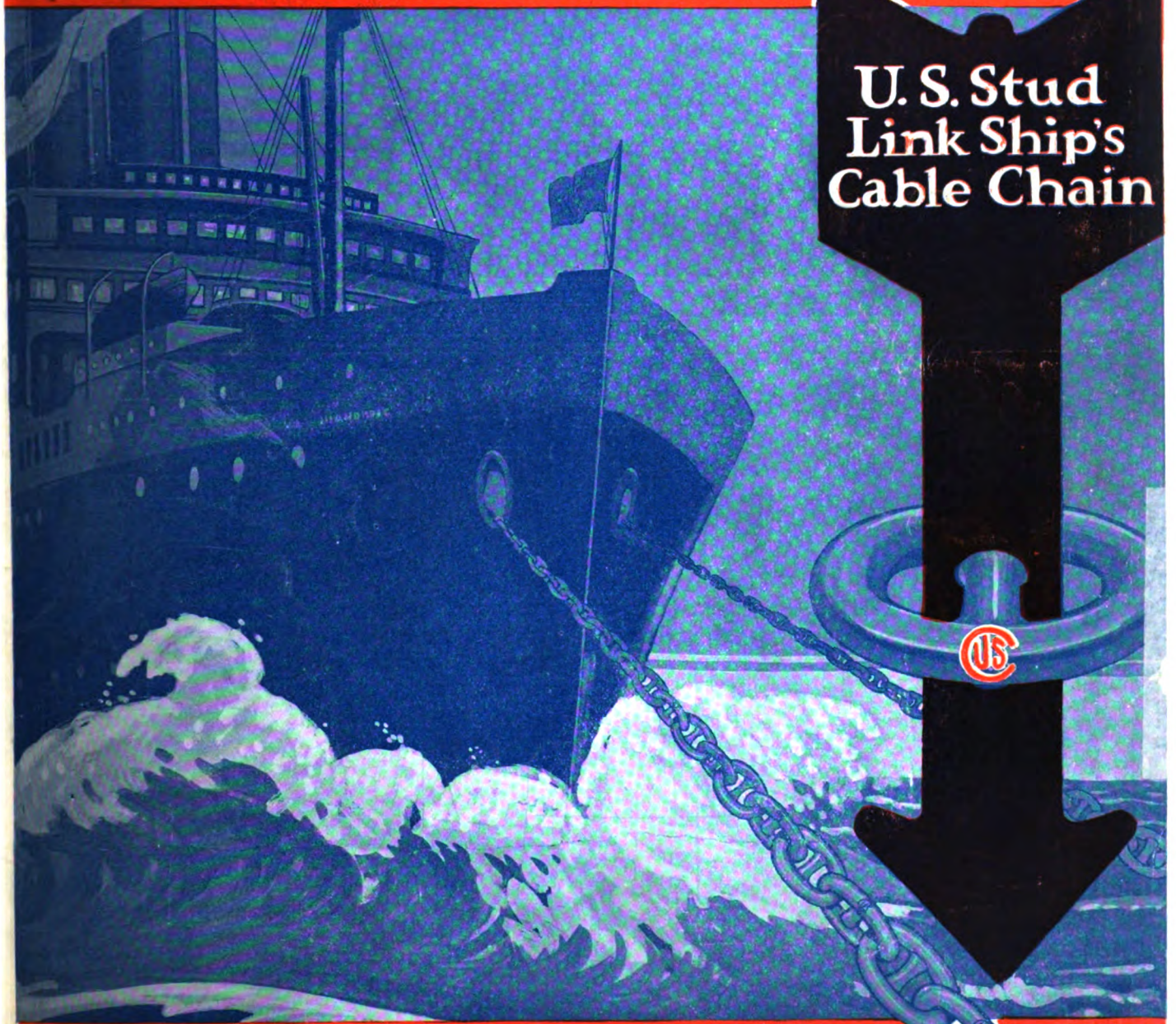
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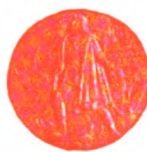
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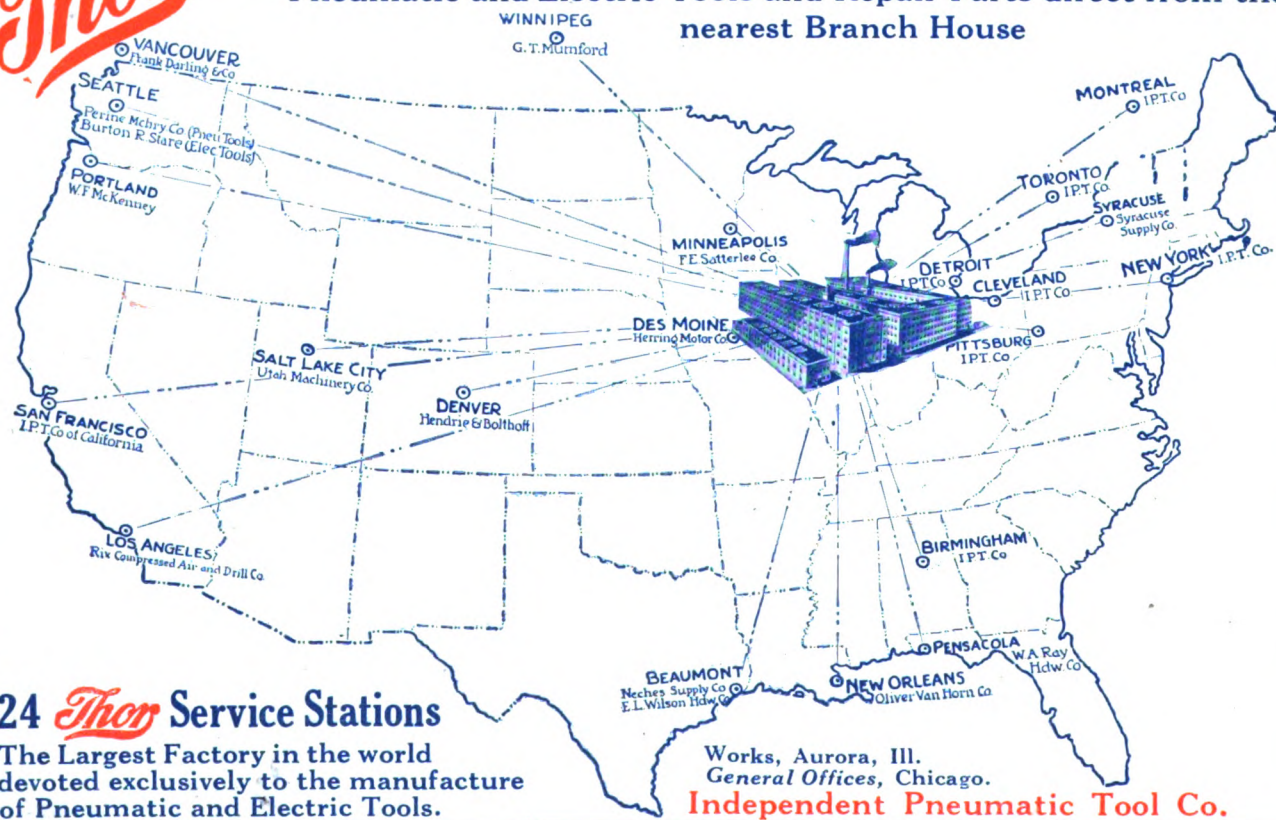
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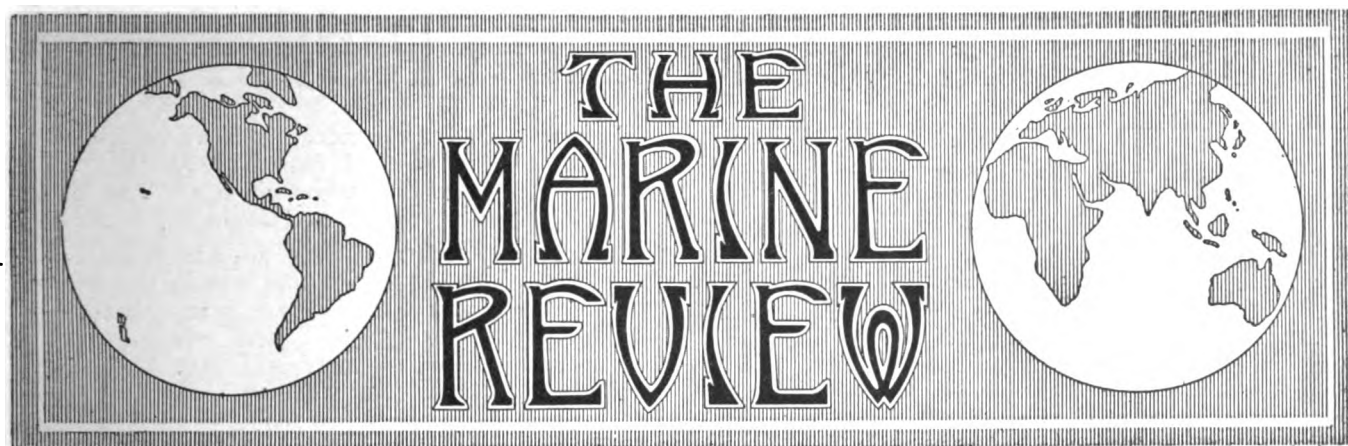
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No. 2

New Year Finds Industry Hopeful

1920 Brings Encouragement to Shipbuilders and Operators—Many Old Problems are Nearer Solution—Private Contracts Being Placed

SOLID food for both the pessimist and the optimist can be found in a study of 1919 American marine history. That year disappointed both those who expected an economic breakdown following the war and those who prophesied settled business. Predictions of the collapse of civilization met the same fate as forecasts of the quick return to the contented days of peace.

Marine soothsayers suffered equal damage to their reputations. Yet the same confidence which leads most Americans to draw encouragement for 1920 from the checkered history of the past 12 months, is reflected in the spirit of many of the marine leaders of the country. The sentiment prevailing in most American industries is that 1919 offered the best chance for the worst to happen—but it did not happen.

In these columns, 12 months ago, attention was directed to the real need for unity of purpose in forming a merchant marine policy and the equal important necessity of translating this need into wise legislation. The same call for action, disregarded now for a year, could be repeated with equal timeliness. Yet the inactivity of the past year was largely a surface indication and some solid foundations were placed under the new American merchant marine.

Americans are Ordering Ships

Shipbuilders at the opening of last year were supported entirely by government business. The unsound economic condition which this relation engendered and sustained became more apparent as the heavy federal expenditures and heavy taxes caused prices to recover from the post-armistice check and ascend to new levels almost daily. Today, many shipbuilders have completed their government work while all of them see within a few months the stoppage of work for the one customer who has given them capacity business for more than two years past. A study of the analyses of shipbuilding conditions in the different districts of the country, presented on the following pages, discloses an optimism

which at first is surprising. This feeling of confidence comes from the relief felt almost universally as the government's abnormal expenditures are slowly reduced and from the encouragement to the shipbuilders given by the orders for ships placed by private investors. A recent report showed more than 800,000 gross tons of ships actually under construction in December. This figure was 500,000 tons higher than the October record and compares with only 150,000 gross tons being built in June, 1914.

The shipyards are better trained now than a year ago and while a great deal of foreign business was lost through government interference early in 1919, American ability to deliver ships more quickly than any other nation, offers an opportunity for securing foreign orders. These are being held back now, principally owing to abnormal exchange conditions.

Private Ownership is Demanded

A heavy influx of new firms into the shipping field promises well for the development of an enlarged and trained shipping personnel. Conditions in the field of ship operation would be immeasurably strengthened if the government had already retired completely from its position of shipowner. The tire-some delays encountered in business dealings with a governmental agency excite frequent suspicion of the sincerity of official intention to give to the nation a privately owned merchant marine. But the public will not tolerate any other course.

Intelligent work has been and is being done in investigating steps necessary for encouraging a merchant marine. Special groups are at work on the revision of our navigation laws, on marine insurance, on the creation of a better market for marine securities and on a national shipping policy. At a staggering expense, the United States now has a merchant marine or as much so as numerical strength of vessels can give. Continuance of the active and organized efforts of the past few months are certain in the near future to make this merchant marine a real asset to the country's industrial life.

World Charter Market Reviewed by

EXPORTS GOOD

**In Spite of Unfavorable Exchange,
Foreign Buyers Still Continue to
Place Orders in American Markets**

AT THE direction of President Wilson, the shipping board has turned over to the British the German vessels which the interallied council loaned the United States for the return of troops. The *IMPERATOR* was turned over to the Cunard line and she has already departed upon her first voyage to her new home. The other boats turned over to England are the *GRAF WALDERSEE*, *ZEPPELIN*, *PRETORIA*, *CAP FINISTERE*, *MOBILE*, *PRINZ FRIEDERICH WILHELM* and the *KAISERIN AUGUSTE VICTORIA*. According to repute, these vessels were released with no good grace by the shipping board, but the matter appears to have been a gross misunderstanding. The shipping board is said to have wished to hold these boats until the English agreed to return to the Standard Oil Co. the tankers which belonged to the German subsidiary of this company.

As a matter of fact, the United States has not only failed to ratify the peace treaty, but has by this act foregone any participation in German reparation. So long as the United States is not a party to peace, the shipping board, according to one view, has no right to protest the taking of the tankers by England. The agreement of the allies for the distribution of enemy tonnage has naturally, not come to the United States officially because she has not officially recognized the peace settlement. In the same way no legal binding was in existence which would compel the shipping board to release any vessels that once came into its power. The mistake was made when the army turned over the German passenger boats to the shipping board after they had completed with them as transports.

American Passenger Routes

The shipping board is left with many ex-German passenger boats which can be used to advantage in extending its maritime adventures. The *MOCCASIN* has started in the South American run, and the board has decided to allocate the *GEORGE WASHINGTON* to the American line for service between New York, Brest, Cherbourg and Southampton. By next summer the flag of the United States will be flying on creditable passenger lines to Europe and South America. Now the board is drafting plans to allocate some of the vessels to the Pacific routes.

The International Mercantile Marine has started the first passenger service out of New York to Germany run since the war. The *MANCHURIA* left last month for Hamburg. This was one of the outstanding developments in the marine field last month. The failure of the Triangle Steamship Co. created some gossip, but there is said to have been extenuating

circumstances, and the incident is not accepted as an indication of the risk of maritime ventures. The Merchants & Miners' Transportation Co. has advertised a line from Norfolk to Havana.

The army has turned back all leased piers and practically all of the tonnage that was in war service. Private owners and operators are being given a belated opportunity to prove their efficiency. The government's passenger boats will first be operated by allocation but so long as they remain the property of the government, alcoholic drinks may not be sold on board. No sooner had this prohibition been noted than the shipping board announced that it would entertain offers to purchase the ex-German passenger vessels by American companies. Nothing has as yet been said about price and the natural inference in steamship circles is that the board will follow the same policy in this regard that it has in connection with the freight vessels. Unless the price is held too high, however, many American lines will be ready to take the property off the hands of the government. While all the reports were being given out in Washington about the plans of the shipping board to dispose of its investments in ships, it was learned that the director of operations of the board had drawn up plans for nine passenger and mail lines.

Planned Extensive Service

The contemplated lines are as follows: 1.—New York to Southampton and Cherbourg. 2.—New York to Hamburg. 3.—New York to Antwerp via Cork. 4.—New York to Marseilles and Genoa. 5.—New York to Brazil and Argentina. 6.—Boston to Bergen, Gothenburg and Copenhagen. 7.—Baltimore to Messina, Piraeus, Constantinople and Constanza. 8.—San Francisco to Bombay via Manila and return via Porto. 9.—Seattle to Yokohama, Vladivostok, Dalny, Shanghai and Kobe. Passenger services under the American flag are greatly needed, but permanent good, it would seem, will only come under private ownership. Private American shippers are today having a hard enough time and they are becoming restive over the delay of the promised assistance from the administration at Washington. Conditions confronting the shipping world during the last few weeks of 1919 were demoralizing to say the least. The steamship companies had

Liberal Bonuses

Millions of dollars in bonuses were given away by American steamship companies as Christmas presents to their employes. The gifts ranged from 10 to 100 per cent of the annual salary. The A. G. W. I. distributed bonuses varying from 10 to 50 per cent. The Kerr line is said to have done likewise, while the Green Star line is reported to have distributed bonuses from 10 to 30 per cent of the annual salary. Luckenbach is understood to have given a 50 per cent bonus. The Barber line gave from 10 per cent upward, one official being presented with a \$500,000 check upon his resignation from active duty.

Experts in This Country and Abroad

sufficient trouble with the various strikes of seamen and longshoremen, but the end of the year brought further trouble in the way of bunker shortage. The scarcity of coal, which became incipient with the strike of the miners in England was hardly over before similar trouble started in the United States. Steamships, as a consequence, were compelled to tie up and await developments. This involuntary delay was extremely costly. Added to this situation the freight market has appeared desultory, but conditions are improving.

Despite the depreciated currency foreign buyers continue to show an inclination to purchase supplies in the United States. Food supplies have been moving to Europe with the usual regularity, principally in British ships laden with wheat, flour and cotton. The North American grain rates remain without alteration, with a steady business on continental account, private chartering being restricted owing to labor troubles. Canadian grain has moved at 10s 6d per quarter to the United Kingdom, with proportionate increases to France and Italy. Timber moved at 490s per standard. The nitrate ports have been quiet, the demand having been chiefly on continental account, the indicated value being 430s to Mediterranean ports.

Liquor Shipments Are Heavy

The River Plate section ruled steady for free grain, maize being quoted at 155s up-river and 145s down-river loading, with linseed cargoes at 165s and 155s, respectively. The continental demand has been quiet for heavy grain at about 185s to 190s, with 220s ruling to Mediterranean ports. Exporters of linseed to New York have offered \$30 with parcels for berthed boats quoted at \$25, as compared with \$15 a month ago. There were rumors that tonnage would be diverted from the Mediterranean to load in early January, which encouraged merchants to expect concessions in

To Sell Ships

THE United States shipping board will receive proposals for purchase of the following first-class passenger vessels up to and including Jan. 20: LEVIATHAN, AGAMEMNON, MT. VERNON, VON STEUBEN, GEORGE WASHINGTON, MARTHA WASHINGTON, AMERICA, DEKALB, AEOLUS, HURON, PRINCESS MATOIKA, POCOHONTAS, CALLAO, MOCCASIN, BLACK ARROW, OTSEGO; and the following steamer and cargo vessels, ETEN, MADAWASKA, MERCURY, POWHATAN, ORION, ANTIGONE, SUSQUEHANNA, PRESIDENT GRANT, MANSEMOND, ARTEMIS, AMPHION, PHILLIPINES, WYANDOTTE, FREEDOM. All bids, it is pointed out, are to be based on taking title of ships "as is."

the near future, but the requirements of the British royal commission have threatened to be exacting for some time to come, in which event it is not likely that there will be much idle tonnage from Argentina. A demand for tonnage space has been reported on account of prohibition. American liquor has been leaving the country at a prodigious rate. Exporters sought to send

FEES ADVANCE

With New Bottoms Coming Into the Market Daily, Some Freight Solicitors Are Advancing Brokerage Fees

much of it to the West Indies but were checked on account of the lack of storage space. The bulk of the shipments, naturally, went to nearby points outside the country. Moreover, an abnormal demand for coal carriage is now in sight. With the settlement of the coal strike and the resumption of production, supplies will soon be going abroad in the usual volume. Norfolk has already been opened and owing to the delay of shipments due to the strike, the movement promises to be rushed.

The shipping board has advanced the cotton rates 10 cents per 100 pounds, making the European rate \$1.35 per 100, with a differential of but 15 cents between Atlantic and Gulf ports. While this reduction in the differential was calculated to relieve congestion in Gulf ports, it is not expected that there is as yet sufficient advantage to ship through any great number of the Atlantic ports.

It was reported last month that British interests chartered an 8800-ton American vessel for one year world trading at 35s per ton. Whether or not this is typical of the charter market cannot be told as the exigencies of the trade at present are not such as to warrant much business. Many of the operators who took charters on shipping board vessels upon the basis of \$9.50 per deadweight ton have wished during the past month that they did not have the ships. While inoperative the expenses of the ships have continued with no little drain upon the companies. Furthermore numerous cases of radicalism have broken out among the crews of ships. Some of these have been aired in the daily press but not half of the truth, it is hinted, has as yet been given the public.

Brokerage Fees Are Advanced

A changed attitude toward freight soliciting has already shown itself. So long as the cargoes offered were in excess of the space available steamship lines gave the matter little consideration. Now the Pacat Steamship Co. has announced that it will hereafter pay a brokerage fee of 2½ per cent on all freight booked instead of the 1¼ per cent allowed by the shipping board. Passenger traffic is being given equal consideration by the steamship lines. Travel to the West Indies has been extremely heavy, but now it is believed that the movement toward Europe will not be so heavy in 1920 as was at first supposed. Europe will not be in any condition to entertain tourists, and the steamer movement is beginning to flow westward again. Passenger rates were advanced early last year and in December the transatlantic lines increased the charge for westbound passage 20 per cent. This

step was taken, it was explained, on account of the depreciated European exchange. Last July when exchange dropped, passengers westbound were required to pay a surcharge of 10 per cent, and when the pound sterling dropped to \$4.10, the surcharge was doubled. The French lines, it is reported, will make similar advances to offset the decline in French exchange.

Boston's Outlook is Bright

Boston is better equipped for handling overseas freight than ever before. New companies have begun operations, opening up trade with countries heretofore reached only from New York and other ports. Perhaps more important than any other feature, however, is the increased interest which is being taken in export trade by those connected with Boston harbor and with shipping business generally. The Shawmut Corp., Boston, has taken steps to provide New England industries with the necessary financial facilities for conducting foreign transactions through local banks without seeking outside assistance. The committee on waterways and public lands has been consolidated with the old port of Boston directors and the harbor and land committee, and now under the title of state department of public works is ready for more efficient and concerted action in connection with Massachusetts harbor improvements and operations. One of the largest shipping concerns in Boston reports a greater export business during 1919 than in any other year in its history.

Cargoes Plenty at Boston

Enough export tonnage is available for shipment to England to fill all vessels sailing from Boston. One line alone had 17 sailings scheduled to England and Holland ports during January. Boats to these ports are continually carrying capacity cargoes from this country and returning with about one-third of the outward tonnage. Sailings recently have been made direct to Baltic sea ports and to Greek and Black sea ports from Boston. Much of the export tonnage is made up of grain from the West and Middle West but there is also an increased amount of machinery and manufactured products represented, and recently a full cargo of case oil left Boston for the Philippine islands.

New vessels which have been added to the Boston harbor fleet include two 8000-ton steamers, for the United Fruit Co., and the United States shipping

board steamer BETHNOR, which sailed recently for Piraeus, Greece, with a full cargo of flour for the Greek government. Although the winter season has closed many of the trading routes along the New England coast, sailings for European ports have increased rather than diminished, and the market for bottoms in the early spring bids fair to be exceptionally strong.

Pacific Market Is Strong

As a whole, the charter situation is strong on the north Pacific. There is an augent demand for lumber tonnage and exporters are unable to get space for their immediate needs. Foreign markets are anxious to place orders on the Pacific coast but the question of transportation is one difficult to solve. As a rule, owners of tonnage are inclined to give preference to other kinds of cargo which can absorb higher freights than lumber.

Since a month ago, lumber freights have remained stationary but the tendency has been for firmer prices. This is equally true of the coastwise situation. To San Francisco a freight of \$8.50 and better per 1000 feet is being paid for lumber and \$10 to San Pedro and San Diego. The California demand is good and an insufficient amount of coastwise tonnage is available to handle the business offering. This is partly due to the withdrawal of considerable local tonnage for voyages to the Hawaiian islands and Mexican ports.

Issues New Pacific Tariff

The transpacific situation is not greatly changed. A new tariff has been issued by the conference lines in this trade which still quotes lumber at \$35 per 1000 feet to the Orient. Eastbound freights are still considerably demoralized by the offerings of space in newly built vessels, constructed at Japanese yards for the Emergency Fleet, and coming to this coast for delivery. However, this is only temporary and there is a probability that the situation will adjust itself in the near future, at least within six months. Shipping board vessels on oriental routes are getting the bulk of the business from the Philippines and China, as the Chinese are still severely boycotting Japanese vessels and the latter are handling practically only Nipponese cargo. The Orient charter market is dull, the only recent fixture of importance being one for transporting South seas merchandise. A 5000-ton steamship has been taken at 18.75 yen for one voyage to Europe.

Ship Congestion Retards Trade

(From Our European Correspondent)

LONDON, Jan. 10.—(By cable.)—Advent of the new year finds charters fairly quiet. The British government still holds control of much of the River Plate and north Atlantic tonnage. This attitude on the part of the government is having a dampening influence on private activities. The Plate to United Kingdom rate is in the vicinity of 160s for February loading. Trade with Cuba is quite active. As a matter of fact, that country is seeking steamers to Europe at 140s. Trade conditions on routes to the Far East are quiet, more so

than on any other route, no improvement is seen for the near future. British ports continue to be congested with vessels seriously delayed awaiting their turn at the piers. The situation is equally as bad as it was a month ago. Improvement in shipping conditions is not expected until a closer approach to a prewar basis is attained. With tonnage badly needed, shipbuilders are making every effort to turn out vessels, both new ships and those being reconditioned. The labor situation has not improved and advances are being sought in various trades.

Optimism Rules in Pacific Yards

Westerners Expect New Orders—Freight Rates on Steel and Abnormal Labor Conditions Are Disturbing Factors—Wood Yards Closing

BY R. C. HILL

WHILE the Emergency Fleet corporation shipbuilding program is practically at an end in the north Pacific district and only one steel yard has as yet taken contracts for private tonnage, builders in that territory are far from discouraged. In fact, the steel shipbuilding industry is believed to be passing through a period of adjustment and refinement from which it will emerge in better condition to battle with competitors in other fields on an even basis.

By the middle of March, it is expected that the last steel steamer built in that district will have been delivered to the government. For several months the yards on Puget sound and on the Columbia river are likely to remain closed. However, in the meantime conditions will change—for the better it is believed—and by the time spring comes, local plants will be in position to accept commercial contracts. In a few words, shipbuilders on the north Pacific coast believe that the price of steel tonnage is bound to seek a higher level and in the meantime they are content to wait. Following the terrific rush of the war period, when speed was of far more moment than economy, the builders want time, figuratively speaking, to catch their breath. They will

carefully view the situation during the first three months of 1920 but they expect to have an abundance of work under way by the middle of the present year.

In the opinion of those best informed on the shipbuilding outlook, the yards in the north Pacific district are assured of a busy period of at least three years. Some state that building will be actively prosecuted for five years. All agree that five months from now, all plants which

desire to continue on a commercial basis will have sufficient work to tax their facilities.

There are several factors which exercise a dominating influence on the shipbuilding industry at north Pacific terminals. Among the most important are the following:

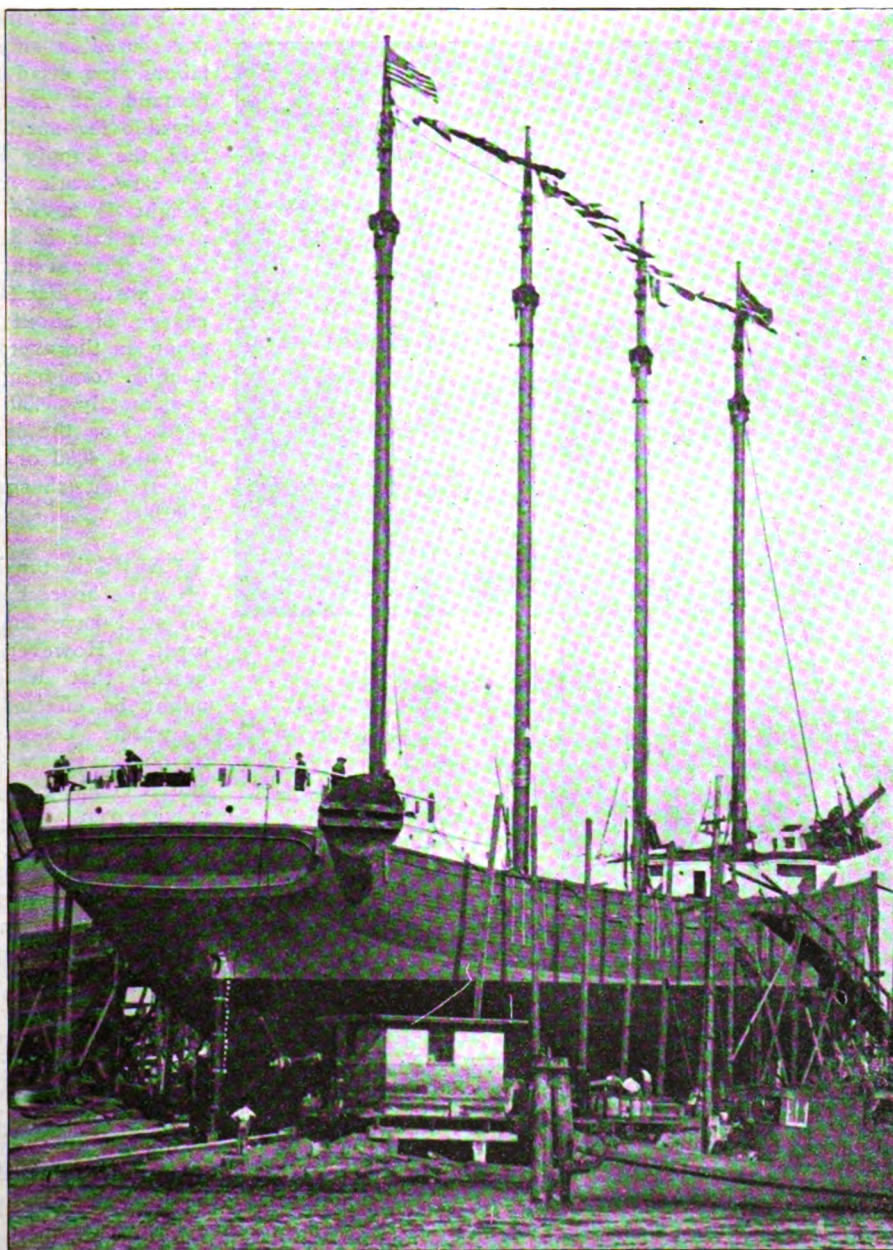
1.—The peace treaty must be settled.

2.—Foreign exchange must be restored as much as possible.

3.—Pacific steel yards must be assured a plentiful supply of steel and

a reasonable freight rate on the raw material.
4.—Labor conditions must be adjusted, efficiency increased and the output per man increased.

Discussing these matters, special stress is laid on the peace treaty for until this world important document is settled and signed, the feeling is that there can be no basis on which business can begin peacetime activity. Following the approval of the peace treaty, the next important step will be to get exchange more near a parity than it is at present. With construction costs at a high level, with European countries in bitter financial straits and yet in imminent need of new tonnage, it can readily be seen that France, for instance, cannot afford to pay practically 2 for 1 at the present rate of exchange for ships built in the United States.



TYPICAL WOODEN AUXILIARY SCHOONER BUILT ON PUGET SOUND

While it is generally conceded that exchange will not rise to normal levels until European countries begin to produce in volume, and there is no question that this will take many months, shipbuilders in the north Pacific believe that with the peace treaty settled, production on the way to greater volume, and Europe in dire need of tonnage, contracts must be placed in that territory in the next six months.

Following the armistice it is an open secret that Great Britain led the movement to bear the price of tonnage. This effort succeeded to some extent, but builders in the north Pacific district believe that the downward tendency has been checked and that tonnage costs are about to seek levels which will permit the taking of contracts under existing cost conditions with a reasonable profit as-

sured. Speaking of this situation, J. F. Duthie, president of J. F. Duthie & Co., Seattle, whose yard made a fine record during the war period, said upon his return from an eastern trip:

"With the signing of the armistice, the movement to break the ship market began but it is now coming to an end, in my opinion. Before long the price of tonnage will go up and I believe we shall have a firm market for a period of three to five years after the treaty is signed and the international financial situation is ironed out. The attempt to break the market has failed. Despite the efforts to bear prices to \$165 per ton, the shipping board steadily holds to \$220, and \$225 per ton.

"Recent sales in Great Britain show a higher level than the figures asked a few months back. That country is

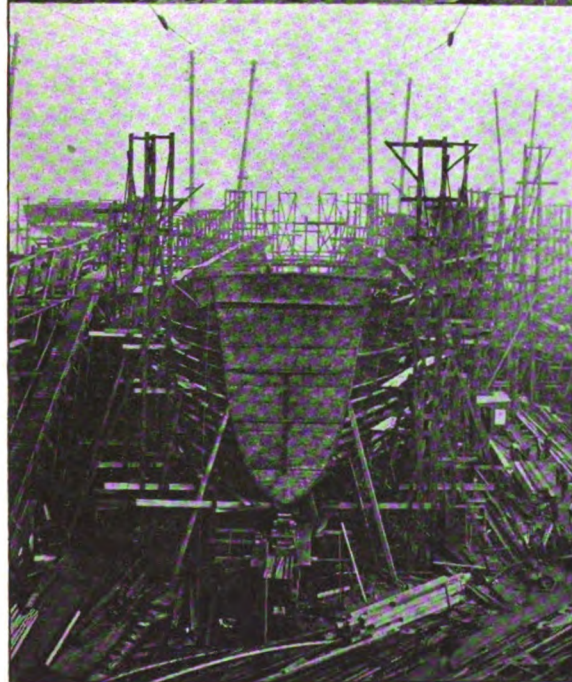
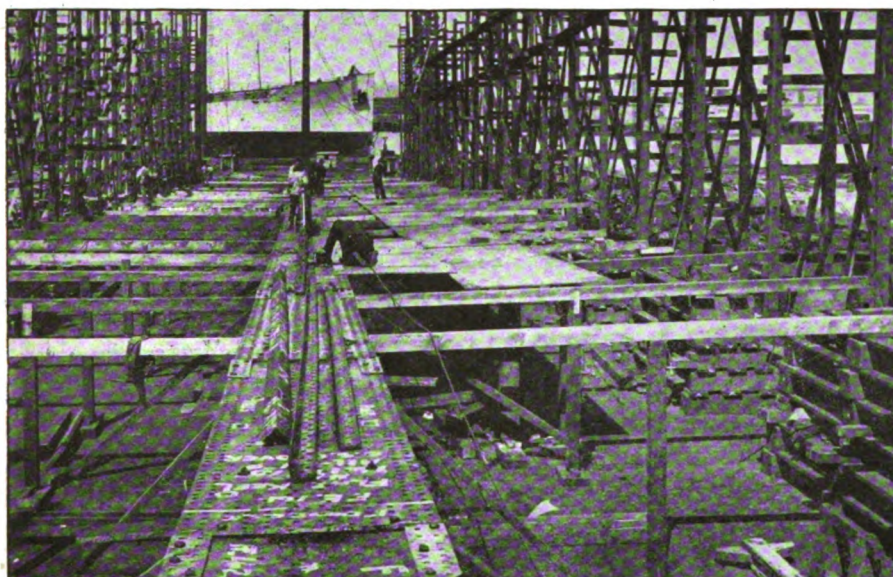
not going to build as cheaply as was generally thought owing to higher wages and decreased output per man. Recent labor troubles there have resulted in a heavy increase in the price of ship plates and the yards are now confronted by a 50 per cent increase in freights on British railroads. The wages of laborers in the shipbuilding yards were to be advanced 5 shillings per week, Dec. 1, and all this helps the industry in America for it will mean competition on a more equitable basis. Great Britain is our most active competitor in shipbuilding.

"The present condition of exchange militates against the United States at present for while Europe needs our ships, we cannot expect contracts until exchange has more nearly reached a parity."

With reference to the supply of steel and the freight rates on the parts used in ships, the Pacific coast labors at a disadvantage. The strong demand for steel has made it impossible for north coast yards to obtain the supply of plates necessary for new work. Again, the overland freight is a heavy handicap. The present rate is \$1.25 per 100 pounds on steel from the point of origin to the north Pacific. This means a charge of about \$75,000 for freight alone on the average type 8800 dreadnought, ton freighter in which approximately 3400 tons of steel are used. For the larger steel freighters in which 4000 or more tons are used, the freight charge alone is close to \$100,000.

YARDS in the North Pacific district while hopeful of lower rail charges on steel have found little encouragement. However, it has been suggested that a considerable saving might be effected by shipping steel by water. Yet it has been impossible to obtain the vessels for this trade, and it is likely that the plants on the north coast will have to absorb this excessive freight charge by effecting economies in other directions.

Another factor that looms large in the industry is that of labor. During the last three months, thousands of men have been detached from the shipyard payrolls. The forces were gradually reduced as the plants neared the end of their contracts. Under wartime conditions, the labor situation grew almost intolerable. Union demands became unreasonable both as to wages and conditions. Now it will be possible for the employers to rid themselves of the agitators and inefficients. When work is resumed the plants will be in position to pick and



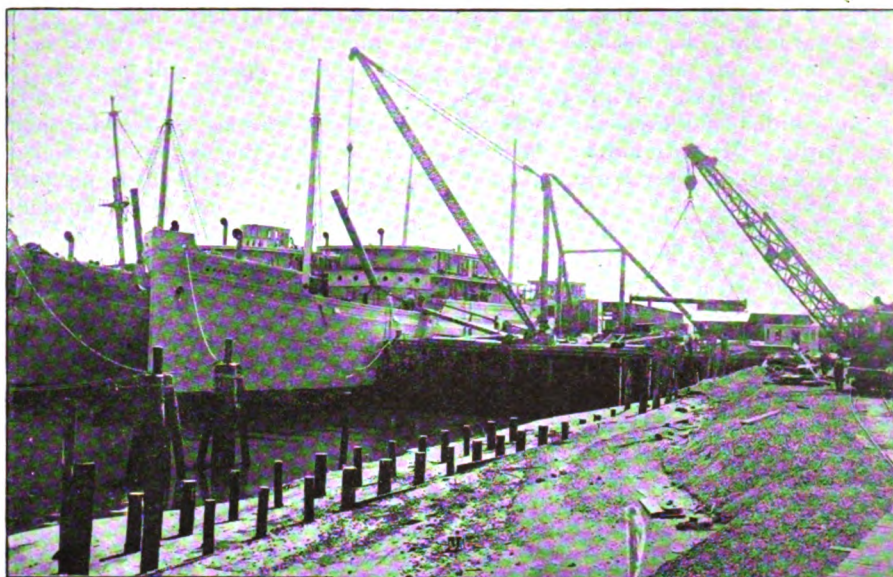
Steel construction work at the Ames Shipbuilding & Drydock Co., Seattle, above—Steel hulls in process of completion at the Seattle-North Pacific Shipbuilding Co., Seattle.

choose as they please. Skilled and efficient men only will be employed and while it is not likely that the open shop will be established, at least working conditions will be much better and the yards will be free of the many intolerable conditions imposed by the walking delegates and agitators. It will thus be possible to raise the output per man and enable the northwest plants to compete on a more even basis with their strong rivals in the East.

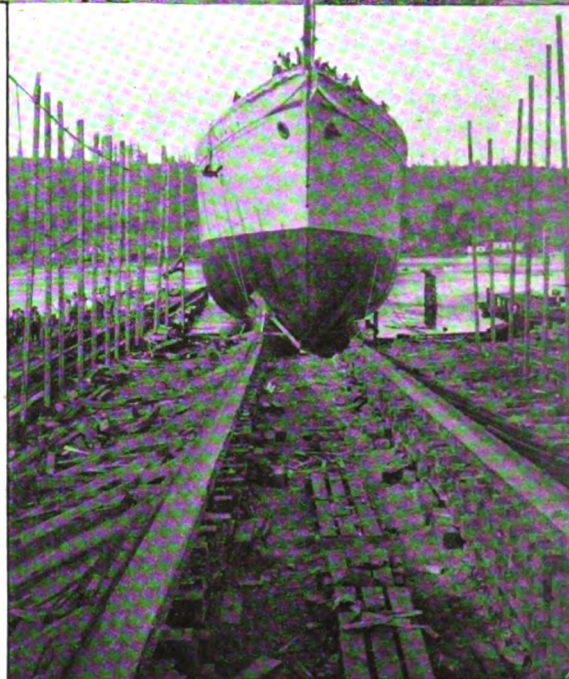
Another factor that is having its effect upon the shipbuilding industry is the lack of a definite government policy. With the great number of vessels on hand under the shipping board's flag, private operators hesitate to order their needs in new vessels until they know what the federal government will do. If it is intended to continue government ownership and operation, private capital will know what course to pursue as soon as official announcement is made. If it is intended to sell the shipping board fleet, it will assist capital in forming its plans accordingly. A definite merchant marine policy by the government will do much to clear the atmosphere and will aid the shipbuilding industry in a large degree.

THE steel yards in the Puget sound district have as yet taken no private contracts. The Skinner & Eddy Corp., having completed its government contracts in December, about six months ahead of contract time, has built four 10,400-ton deadweight steel freighters for the Robin Steamship Co., a subsidiary of the construction company. This yard has now finished all its construction. The Seattle-North Pacific yard will complete its government steamers in the near future and by March 15, it is expected that the Ames Shipbuilding & Dry Dock Co. and J. F. Duthie & Co. will have completed deliveries of all the remaining government contracts. Then these yards will remain idle until new work is obtained. The Todd plant at Tacoma, Wash., having been idle for more than two months, will not finish its contracts for some time. On the Columbia river, the Northwest Steel Co. and the Columbia River Shipbuilding Co. have finished their government work while the Standifer plant at Vancouver, Wash., has some private contracts on hand and is still operating on two government steamers.

There is a strong demand for tank steamers and while some contracts for this class of work have been



Wooden steamers outfitting at Seattle for the shipping board, above—One of the largest sailing vessels built on Puget sound, wooden schooner Bright, taking the water at the National Shipbuilding plant, Seattle, below.



awarded in California and on the Columbia river, no contracts have been taken in the Puget sound district. It is reported that this work has been placed at about \$185 per ton while north Pacific builders insist that a fair price for tankers is from \$205 up. Work of this kind has been offering but not at prices to attract those builders. Three tankers and five freighters have been placed with Oregon yards.

Speaking further of the outlook, J. F. Duthie said:

"If arrangements could be made to carry the Norwegians for from three to five years, a great deal of tonnage could be built for the Norwegians who need more ships. Their idea is that they could work out the problem of the rate of exchange in three years and if that were impossible it could be done through trade

balances with the earnings of the ships as one of the big factors. The present rate is 20 per cent against Norway. This means that under present conditions they would have to pay one-fifth more than in our money, or in other words, \$1,200,000 for a \$1,000,000 ship. Before the war, the difference was in favor of the kronen as against the dollar. They paid us a good price for their ships and obtained them at a favorable figure in their own money. The demand for tankers is not restricted to American companies for it is predicted that Great Britain will soon be in the American market for tankers. In the East, I found that many shrewd observers expect steel to be scarce for five years due to the tremendous demands for it."

In the opinion of C. H. Hamilton, President of the North Pacific Ship-

builders' association, the north Pacific yards are in splendid position to compete in the world's markets for new business. With the peace treaty settled and exchange more on a parity, Mr. Hamilton believes the yards in this territory will soon get new work.

"Our yards can compete with England today," said Mr. Hamilton. "Wages in Great Britain are up and their efficiency is down. They also have a limit set on the amount of work men are to do so that altogether their costs are nearly as high as ours with our higher wage scale.

"On the Pacific coast we have to overcome the high freights by rail on the steel used on our plants. However, this can be done because of our greater labor efficiency. This fact was demonstrated during the war period by the splendid achievements of our north Pacific yards. The weather here permits of construction work being prosecuted during the entire year. These factors place us on a parity with eastern yards and will enable our yards to offset the handicap of high rail charges."

Victor H. Elfendahl, executive secretary of the recently organized Skinner & Eddy Shipbuilding Co., believes that Puget sound yards have made a record that will entitle them to much recognition during the competition of peace times.

"There is a strong demand for tanker construction," he said, "and if exchange approaches parity there will be some cargo contracts awarded. However, much depends on the matter of exchange which at present looms as the most important factor. There will likely be some navy work awarded. I am satisfied that under equal conditions, the United States can compete with foreign rivals in shipbuilding. If fair values are offered there is no reason why Seattle yards should not get their share of the work. The records made by our plants during the war entitle us to recognition and I am sure we shall get it. Following the immediate demand for new tonnage, I am inclined to believe that conditions will revert to those obtaining prior to the war."

THE hopeful outlook for the steel industry does not apply to wood shipbuilding. It is the general opinion that the wood yards can expect no further business with the exception of contracts for coasting steam schooners, cannery tenders and small craft. Practically all the wood yards in the north Pacific are closed. The Grays Harbor Motorship Corp. built for owners' account four splendid

barkentines with large lumber carrying capacity, but no new work is in sight. These vessels will be ready for service within the next few months.

With the surplus of wooden hulls held by the Emergency Fleet corporation there will be little incentive for wooden construction for the hulls already in the water can be purchased for much less than it would cost to replace them. Many of these vessels will be used for barges and others are being purchased at reasonable prices for sailing vessels. There is a good demand for coasting vessels of wood and some contracts of this nature may be placed at north Pacific yards. However, it may be expected that the wood shipbuilding industry will revert to the prewar condition which confined its activities to smaller craft.

One wood yard which expects to continue operations for some time is that of Kruse & Banks at North Bend, Oreg., which has just closed contracts for eight schooners for California companies.

Orders have been received to dismantle the wooden plant of the Foundation Co., near Victoria, B. C. This yard has turned out a number of wooden steamers for the French government and it was expected that construction would be continued on four wooden schooners under the loan plan of the Dominion government. The latest orders indicate that further work will not be done.

AMONG the wood yards which have work on hand is that of the St. Helens Shipbuilding Co., St. Helens, Oreg. This plant is a subsidiary of C. R. McCormick & Co., a large lumber exporting and shipping firm. The steam schooner EVERETT is now being built at this yard and other work is in sight. This yard has been in operation for eight years and has been unusually successful.

One factor retarding the wood yards in the north Pacific district from accepting new work, if any were offering, is in the delay in obtaining settlement from the government for cancellations of contracts. For months these builders have been awaiting adjustment of their claims which have now been promised speedy consideration. Until this is settled, new work cannot well be undertaken.

Astute ship operators have found some splendid hulls among the fleet of wooden ships on the market in the north Pacific district. There are some wood hulls that are admittedly of extremely poor construction but much of this is attributed to the rush of war work and the lack of skilled

help. However, Pacific coast built wooden ships have made a creditable record and operators are picking up some good bargains in wood hulls for conversion into sailing vessels. The wooden schooners built for foreign owners have made a good impression and if foreign operators are again in the market for wood tonnage they will turn to the Pacific northwest.

ONE indictment against the wood ships of the north Pacific district is that they were built of green timber. According to E. W. Heath, a veteran builder of the north Pacific, this idea is entirely erroneous. "Built of green timber or not," said Mr. Heath, "if properly constructed, wood ships are as staunch and seaworthy as anything of their kind afloat." As proof of his statement Mr. Heath refers to the many wood ships built on the north Pacific coast and in successful operation for years.

The Supple-Ballin Co., Portland, Oreg., which launched 14 steamers for the government, many of them of the composite type, has closed its books and is seeking no new business. The yards at Portland are being dismantled.

Under authority from the Emergency Fleet corporation, the materials, equipment and all plant embraced in the Sanderson & Porter yard at Raymond, Wash., are being offered for sale. The government officials at first decided to auction the plant but so many requests were received for opportunity to select certain kinds of equipment that the other plan was adopted. The sale will continue 30 days. This yard built a number of wooden steamers for the government.

Officers of the Emergency Fleet corporation are making progress in disposing of the wooden hulls lying in storage at north Pacific ports and they are predicting that the entire lot of the fleet will be sold before the end of 1920.

Industries dependent on steel shipbuilding, of which many came into existence during the war emergency, are also looking hopefully to the future. Among the older plants of this character is that of the Commercial Boiler Works, Seattle, which has been in business for years and which made a record during the last four years. In that time this plant built 292 Scotch marine boilers for ocean-going vessels. In 1916, 21 were built; in 1917, 74; in 1918, 111, and in 1919, 86. This firm is expecting a good business in 1920 with the revival of building.

Builders Face 1920 Confidently

Development of Private Orders in Past Few Months Offsets Decline in Government Work—Healthy Competition For Work Is Expected

BY V. G. IDEN

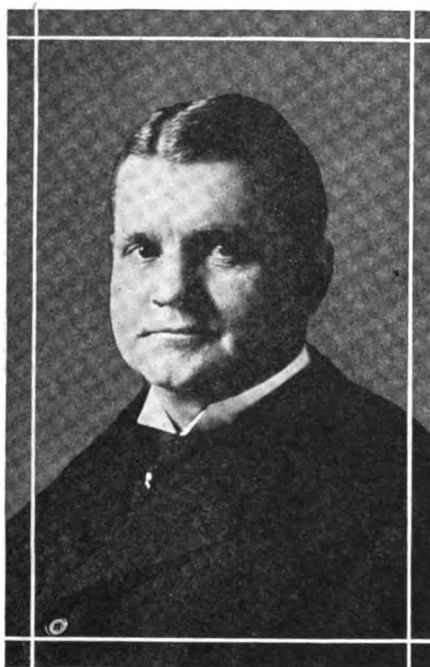
WITH the closing of the wood and the concrete shipyards and the prospective abandonment of the government agency steel yards, maritime interests are beginning to realize that the shipbuilding capacity of the United States is probably after all not in excess of the requirements. Shipbuilders, therefore, began to display a more optimistic attitude toward the outlook as the season of 1920 opened. The day of guaranteed profits is rapidly passing with the conclusion of the contracts had with the Emergency Fleet corporation. Many yards feared the sudden transition back to a competitive basis but the larger and more permanent yards are beginning to realize that it is not going to be so difficult as they imagined at first.

Homer L. Ferguson of the Newport News Shipbuilding & Drydock Co. was among the first of the established shipbuilders to petition the removal of the government's fostering hand. It is his opinion that American shipbuilding must stand upon its own legs and that it will so stand in company with the shipbuilding industry of foreign nations. While the war encouraged the United States to extend its shipbuilding activities abnormally, the curtailment of the industry to a normal basis will represent no great financial loss to any private interest. In the meantime, the American industry has gained the services of a much larger technical staff, has a much wider source from which to draw raw material and has had wonderful experience in learning how to build ships cheaply.

A STUDY of the statistics of American shipyards dispels the popular idea that the normal production capacity has been increased many times beyond the normal requirements of the shipping industry. Considering the wooden and the concrete yards this may be true but it is not beyond the realms of possibility that the privately owned steel yards will be able to find sufficient work to keep them busy. According to the statistics of the shipping board, there were in the United States 130 yards with 398 ways in the spring of 1917, whereas in the spring of 1919 this had been

increased to 223 yards with 1122 ways. At the outbreak of the war, the United States had 19 major steel shipbuilding yards and before the government entered into merchant shipbuilding these were completely filled up with navy construction.

The shipping board encouraged the building of new yards and the builders entering into contracts then were wise enough to amortize the cost of building the yards in the profits anticipated from shipping board contracts.



M. E. FARR

Mr. Farr is president of the American Shipbuilding Co.

These emergency yards assisted materially in building the vast fleet of tramps for the government but they intend to withdraw from the field immediately.

"Ship construction by the Foundation Co.," said Franklin Remington, chairman of the board of that company, "was entirely a war measure. We went into the business of building ships to increase the shipbuilding capacity of the country at a time when ships were badly needed. We have no intention of staying in the business permanently. We have completed most of our shipbuilding contracts and have closed down all but three of our yards.

"As to whether American ship-

building yards can continue in business in competition with foreign yards, I am not in a position to say. My opinion is, however, that the cost of ship production abroad, owing to many causes, is approaching our own costs very closely, and if our labor does not kill the goose by exorbitant demands for short hours at abnormal wages, I think we should have a very good chance in competition with foreign yards."

AMERICAN shipyard labor received a basic wage of 30 cents an hour during August, 1914, whereas during 1919 it was 80 cents per hour. Despite this abnormal increase in pay, the cost of shipbuilding in this country compares favorably with that of foreign nations. Wages in Japanese yards are much lower but labor there is wasted and the yards are located far from the source of supply of shipbuilding material. The great advance in wages in the United States was due to the abnormal increase in ship construction. At the outbreak of the war only about 50,000 men were employed in the shipyards, whereas in November, 1918, the time of signing of the armistice, shipyard labor totaled 385,217.

The curtailment of building activities and the cessation of night and holiday work, made it possible to do away largely with excess payments for overtime. Labor was restless as a consequence and some 200 strikes occurred in the yards during 1919. The largest strike was that in the northern Pacific district, beginning in January, lasting for 50 days and involving some 40,000 men. A further strike occurred in the San Francisco bay and southern Pacific district in October, lasted 30 days and involved 35,000 men. A strike in the shipyards in the New York district began in October, lasted about 30 days and involved some 20,000 men. It cannot be said that any of these strikes were signally successful. They proved that the curt demands of radical labor groups will not receive the consideration they did during the impatient days of war. Since the armistice some 53,000 laborers have been discharged from the shipyards and about 2000 ex-sailors and soldiers given employment.

By the closing down of the surplus shipways the shipbuilders will be able to restore normal conditions in their labor affairs much quicker. Approximately 260,000 men are employed in the steel yards which number has not been materially reduced since the war. While it is possible to draw some surplus from the closed wood and concrete yards, the steel yards will find it difficult to locate any large surplus of labor.

PRODUCTION during the war is no measure of profitable production during the normal times which are rapidly approaching. The industry has no reason to be frightened at the statistics of production during 1919. The 6,000,000 deadweight tons of ships built during the past year were the war-type of ships. They were tramps chiefly. Little building has been accomplished with the object in view of meeting specific trades. That this war building is nearly completed is actually a healthy indication. On Nov. 15 the shipping board announced that the yards had delivered 356 requisitioned ships and 756 contract ships. They were outfitting 7 requisitioned and 171 contract and had 16 requisitioned and 308 contract ships on the ways. This left but 9 requisitioned and 68 contract ships for which the keels had not then been laid.

The American shipyards produced over 500 steel vessels for the Emergency Fleet corporation during the year 1919, which is an increase of some 200 vessels over the production during 1918. Speaking in round numbers it may be said that the tonnage of ships produced by the American yards during 1919 was twice that of 1918. According to the present schedule of building, the yards will deliver to the Emergency Fleet corporation during 1920 a total of more than 400 new steel vessels. If this anticipated rate of production is carried out the construction work done in the shipyards of this country during the year now beginning will not be far behind that of 1919.

PRODUCTION in 1919 made it the record year of ship construction for the United States. It was a record production for any country during any year of history. Shipping men can reasonably anticipate, therefore, that the production of 1920 is going to be such a record as will probably not be surpassed for many years to come by the shipyards of any other country, for during 1920 the yards will undertake private contracts on their own account in addition to

completing the work for which the government has contracted.

Much of the shipbuilding work to be done for the government during 1920 will be fitting out. According to the building schedule of the fleet corporation only 274 steel vessels remain to be launched of all the shipbuilding schedule planned for the government, and these will, very naturally, be launched during 1920. The Atlantic coast yards have something less than 150 merchant vessels to deliver to the government during 1920, while the Pacific coast yards have about 142 ships to deliver this year. The Great Lakes have 76 to deliver and the Gulf yards are to deliver 48



W. H. TODD

Mr. Todd is the head of the Todd Shipyards Corp.

more. This will leave probably less than 20 vessels to be delivered to the government during 1921. Wherefore, the shipbuilding program on government account will practically all be completed during the current year. The final deliveries will be completed during the first half of 1921.

Of the 274 steel vessels, the shipyards will launch during 1920 for the government, 116 will come off the ways of the Atlantic yards, 85 from Pacific ways, 41 from Great Lakes and 32 from ways on the Gulf. The keels of practically all of these vessels have been laid. During 1920 the Atlantic yards will lay 29 keels; the Pacific yards 13 keels and the Gulf yards 4 keels on government account. The keels to all the ships contracted for with the yards of the Great Lakes are laid and building is progressing.

These figures do not take into account the shipbuilding work done in the agency yards, namely Hog island, Newark bay, and Merchant, but are concerned only with the private yards which will now be coming into the market looking for work. It is anticipated that Hog island will close down, the final disposition of the property being determined before 1921. The Submarine Boat Corp. has purchased the Newark bay yard from the government and will continue its operation. This company intends to complete on its own account the 32 fabricated 5075-ton ships the contracts for which the government canceled. The company will offer these ships for sale in the world's markets and then turn its attention to building a larger fabricated boat in the same yard. So great is the demand for new ships that the Submarine Boat Corp. is reputed to be of the opinion that it will be able to operate the 28-way yard successfully upon the fabricated principle at a reasonable profit for probably 10 years to come, and perhaps longer.

THE American International Shipbuilding Corp., which has been building the fabricated boats for the government upon an agency basis at Hog island, is declared by some to be too large to operate profitably upon a commercial basis and, therefore, it is the consensus of opinion that it must be closed. The yard will undoubtedly be turned into a freight terminal for Philadelphia.

Our shipbuilding industry has complacently discarded the concrete ship and is rapidly accepting the decision of the shipping world that the wood-powered vessels is not best adapted to modern needs. The trend is toward a concentration of effort on the steel ship and quality production will be the keynote of the future. Such being the case the life of the fabricated yard, it is believed by some, is probably limited, even though the theory of fabrication is adopted in a modified form for certain particular work in the yards.

The conclusion of the merchant work building for the government will release some 250 steel ways in American shipyards for private contracts. Approximately 127 ways are located on the Atlantic, 90 on the Pacific, 78 on the Great Lakes and 38 on the Gulf coast. This is exclusive of the fabricated yards, the concrete yards and those engaged in wood shipbuilding.

Whether or not the release of these ways from government control will

have any material effect upon the price at which new private contracts will be let is a problem. During the summer of 1918 some of the eastern steel-ship yards offered to accept contracts upon the basis of \$185 per ton for cargo steamers. But after that came the steel strike, the coal strike and labor difficulties within the yards themselves. The price of material advanced and the cost of building ships went up. Consequently, contracts let during the last month of 1919 went at approximately \$195 per ton. Uncertainty of conditions in the future prevents any speculation as to what the cost of shipbuilding will be within the next year. Stability in the labor market would undoubtedly bring the price down.

On July 1, 1919, the American yards had already taken 43 contracts with private owners of which 19 were to be 1000 gross tons up to 10,600 gross tons in size, thereby proving that private construction work would be coming in slowly as the government work is completed. The fact stands out that ships are in great demand. Although the registered tonnage under the American flag is today in excess of 12,000,000 gross tons, or more than 59 per cent larger than in 1914, the world's tonnage has not increased in any such ratio. The world tonnage today is probably in excess of 51,000,000 gross tons, or approximately 2,000,000 tons more than it was during the first year of the war, but the demands on ocean carriers are much larger.

SHIPPING men who foresee profits in the industry have been anxious to let contracts for ships and they are beginning to realize that they can be built just as cheaply and just as efficiently, and maybe more so, in American yards.

"The tendency in shipyard labor," said E. H. Ewertz, general manager of the Moore plant of the Bethlehem Shipbuilding Corp., at Elizabeth, N. J., "is to increase production and with such increase there is no reason why we should not be able to compete with foreign shipyards, both as to cost and time. It is evident that a large number of ships will have to be built for private owners in order that they may obtain such ships as are particularly fitted for their line of activity.

"No doubt, we shall have the opportunity of building ships for foreign owners in order to enable them to re-enter the shipping field at an early date and we are in a better position to give prompt deliveries than will be possible to obtain from shipyards

in any other country. This seems certain. One of the uncertainties that has confronted American shipyards during the past few months arose out of the attitude assumed by the shipping board. While technically the yards were to be permitted to accept contracts wherever they elected, the shipping board actually vised the prospective contracts. The board had cancelled many of its own contracts and it was desirous of compelling the yards to take over the government's surplus material. Such tactics, bound tight in official red-tape, hampered the return of shipbuilding to normal.

"I do not look for much private building until the government defin-

pension of activities of some yards may be expected because of the conflict with the shipping board in regard to the right to accept foreign business.

SHIPBUILDING on the Pacific, in the opinion of many, would be affected by a slump as quickly as the industry in the South, these sections being further removed from the source of production of materials than the Atlantic yards. But according to advices received from San Francisco, shipbuilding in that district has already passed through its critical period. The Pacific yards will successfully complete their contracts with the Emergency Fleet corporation and are making preparations to settle down to a permanent peace basis of operation.

After launching six 14,000-ton ships during December, the Moore yards will proceed immediately to lay the keels of several Matson Steamship Co. freighters. Other yards on the coast anticipate obtaining private contracts. The Associated Oil Co. has been asking for bids on two 70,000-gallon tankers. The General Petroleum Co. has been waiting for the shipyard situation to clear before calling for bids on a 12,000-ton tanker.

The announcement of Henri Bontour, representative of the Compagnie Messageries of France, that he would place plans before San Francisco builders for the construction of a number of new ships is another factor that has stimulated the industry. G. Falcoz, head of the engineering department of the company, said he can see no reason why Pacific coast yards cannot compete successfully with Atlantic yards and even with yards in England in building ships for France. He added, however, that the price of the shipping board's steel vessels, \$220 a ton, is higher than he expects to pay. The company is in the market for a fleet of 24 ships, either already built or for construction.



H. A. EVANS
Mr. Evans is president of the Baltimore Dry Docks & Ship Building Co.

itely decides upon a merchant marine policy and determines upon the disposition of its ships," declared L. Prior, president of Merrill-Stevens Shipbuilding Corp., Jacksonville, Fla., "and I do not look for much foreign business until the rates of exchange have adjusted themselves so that foreign buyers would not be penalized to the extent they are at present."

This is the attitude of some shipbuilders and from the west comes the report that the Northwest Steel Co. and the Columbia Shipbuilding Corp., Portland, Oreg., closed down in January, on account of the high freight rate on material and the intolerable labor situation. Early in December it was announced that the shipyard of Skinner & Eddy at Seattle had temporarily closed for the first time in 20 years. Temporary sus-

BEFORE the end of 1919, however, American shipyards had laid the keels of 118 new ships, representing some 550,000 gross tons. All of these are for private account and only one intended for a foreign customer. "Independent of whether the government continues its ship construction program or not, America's new shipbuilding industry is already beginning to prove that it is here to stay," according to an announcement of the Atlantic Coast Shipbuilders' association.

The Eastern Steamship lines has placed a contract for a 2700 deadweight ton freighter with Pusey & Jones. This is intended for fast freight service between New York and Boston. The Green Star line let contracts with the Standifer Construction Co. of Vancouver, Wash., for five 9500 deadweight ton steel cargo carriers. The A. G. W. I. let contracts for 10 new tankers ranging in size from 10,600 to 14,600 deadweight tons. The Sun Shipbuilding Co. will build four at Chester, Pa.; the Bethlehem Shipbuilding Co. will build four at Fore River, Mass., and the Newport News Shipbuilding & Drydock Co. will build two at Newport News, Va. The Standard Oil Co. has ordered two tankers measuring over 20,000 tons each. The Vacuum Oil Co. has let a contract with the Moore Shipbuilding Co. at Oakland, Cal., for one 10,000-ton tanker. The Morgan line plans five new 6000-ton freighters. The Standard Shipbuilding Corp. is to build two special type combination fruit and passenger ships for the Cuyamel Fruit Co. Two similar vessels are building for this line at the yard of the Newburgh Shipyards Corp.

OCEAN lines are especially in need of tankers and many contracts for this type of ship have been and will be let in the near future. Naturally, not every American shipyard is equipped to handle such work and the competitive bidding between yards is not so keen as the public might imagine. Among the tankers contracted for or projected are included the Bethlehem Shipbuilding Corp., with 18 tankers varying in size from 10,000 to 12,500 deadweight tons, which are to be built at the corporation's yards at Fore river, Sparrows point and San Francisco; the Moore Shipbuilding Co., four tankers of 10,000 tons each; Federal Shipbuilding Co., five tankers of 15,000 tons each to be built at Kearny, N. Y.; Newport News Shipbuilding & Drydock Co., two 15,000 ton tankers; Western Pipe & Steel Co., San Francisco, two 12,000-ton tankers for the Union Oil Co.; Staten Island Shipbuilding Co., two 4000-ton tankers, and the Union Shipbuilding Co., two 10,000-ton tank steamers. The American Bridge Co. has contracted to build a large number of 1000-ton oil barges, for the Standard Oil Co. and other oil concerns, all of these to be constructed on the Isherwood system.

During the year recently closed we have been chiefly occupied with the demobilization of industry, and

with the preparation of plans for the normal business of peace," said R. H. M. Robinson, president of the Merchant Shipbuilding Corp. "It need not be considered discouraging, that this colossal task is not yet entirely completed; sufficient progress has been made to indicate that before the end of 1920 we shall be well on our way toward normal conditions. Everything points to sufficient work being obtainable for every efficient, well managed American shipyard. The future looks entirely hopeful."

Yards built for permanence and equipped to accept the work that is being offered by the shipping com-



J. W. POWELL
Mr. Powell is vice president of the Bethlehem Shipbuilding Corp., Ltd.

panies have no reason to fear the coming season of 1920. Along the Atlantic coast there are a number of well designed yards. Many of these have navy contracts which will carry them on for some time to come. Wars and threats of wars will bring them business. But without the naval work these permanently and efficiently established shipyards which the United States has inherited as a result of the world war will find many valuable merchant-ship contracts to be had.

I AM optimistic about the future of American shipbuilding," said Thos. C. Desmond, president of the Newburgh Shipyards, Newburgh, N. Y. "At the present time, of course, the shipbuilding facilities of the country, stimulated by our war necessities, are

greatly in excess of any normal demand for ships. There will soon, therefore, have to be a great curtailment of ship production and I expect this will occur in one way with the cessation from activity of the large government owned yards, such as Hog Island. Other yards which have too many ways now will also have to cut down the number of their ways, and certain very inefficient yards in several parts of the country will have to stop business entirely.

WHEN this proper adjustment of shipbuilding facilities to a reasonable demand has been made, however, I expect American shipbuilding to go on and continue at a normal prosperity indefinitely. American shipbuilding costs are steadily coming down with the increase in skill resulting from increase in experience of the many new men who came into American shipbuilding during the war. New American technical methods of increasing shipbuilding production may also be expected in helping to lower shipbuilding costs here. At the same time that our costs are going down, shipbuilding costs in foreign countries, particularly Great Britain, are steadily rising. The difference between the payments to American labor and British labor now is less than it ever has been, and in my judgment the difference will continue to grow less in the next few years because British labor and other foreign labor are demanding higher standards, more nearly approaching American labor standards. At the present time also, steel and coal cost less in American shipyards than in British shipyards, with prospects of further differentials on other shipbuilding materials in our favor.

I BELIEVE that shipbuilding is an industry peculiarly adapted to piece work payment for labor which in its essentials is one of the best forms of profit sharing between capital and labor. Most managers of industries feel that the piece work system, paying a man according to the work he produces, is very sound American doctrine. It enables a superior workman to earn superior wages instead of holding all men on a dead level. I look to see a large extension of the piece work system in American shipbuilding with a resulting great increase in production which means lower costs of American ships and at the same time a square deal alike to both the capital and labor employed in American shipbuilding.

"As regards the merchant marine

wages of foreign crews on foreign ships, they have been steadily rising with the result that now there is not nearly so much of a difference between their wages and the wages of American crews on American ships as there was several years ago. The recent international labor conference is a significant sign of the times and with the awakening that has resulted from allied co-operation during the war I believe that soon merchant marine wage standards will pretty much be equalized the world over. The development of oil burning ships and particularly those with internal combustion oil engines is a further advantage to the American merchant marine because we are the principal oil producing country. With reasonable legislation in congress and particularly with sane action in regard to the disposal of the present government fleet I see no reason why America cannot maintain the position she has resumed on the high seas.

American shipbuilding therefore can expect, it seems to me, a reasonable amount of business from exclusively American owners and as soon as the foreign exchange rates recover from their present abnormal condition American shipbuilders should also be able to secure a fair percentage of foreign business particularly from Italy, Greece and France."

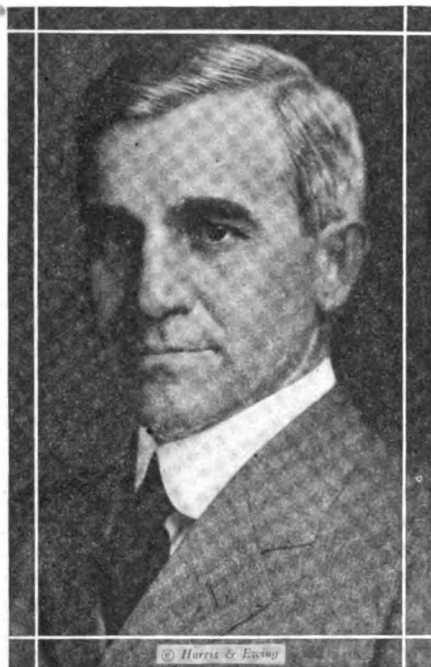
Both Italy and France have been planning to have American yards build ships for them. Italy proposed to purchase some of the shipping board vessels but the terms offered were not satisfactory. Within the past month the Submarine Boat Corp. has contracted to sell four "unassembled" ships to Italy. Now it is reported from Paris that the French propose to have 125,000 tons of ships built in American yards, despite the disparity in the exchange. The Scandinavians are not so seriously affected by the exchange and they are said to be planning to let contracts on this side of the Atlantic. The Scandinavians desire ships to operate in the Baltic trade. These are normally small and therefore the yards on the Great Lakes are making a vigorous campaign to obtain the work.

SUPPOSE 30 per cent of the shipbuilding ways are compelled to remain idle during 1920, as has been forecasted by some construction experts of authority, the vacant ways will be composed primarily of the agency fabricated yards, the wooden yards and the concrete yards. New steel ships promise to be in sufficient

demand to give a normal amount of work to the permanent yards capable of doing the work.

But American yards must depend upon the American merchant marine for their main source of revenue. It is foolish to suppose that the American merchant marine possesses an excess of tonnage. The 12,000,000 gross tons to be added by the shipping board comprise many vessels which shrewd commercial wisdom will compel us to discard in the not distant future.

"Europe in all directions," Eugene T. Chamberlain, commissioner of navigation, points out, "is deeply penetrated by arms of the sea—the Bal-



H. L. FERGUSON
Mr. Ferguson is president of the Newport News Shipbuilding and Dry Dock Co.

tic and North seas, and the Mediterranean, Adriatic, Aegean and Black seas. These give to the salt-water foreign trade of densely populated countries of Europe an importance not always appreciated, and they determine, too, the types of ships required, for the voyages are relatively short and frequent, and smaller ships are at an advantage in such trades. The longer voyages of the foreign trade and even of the coasting trade of America require larger ships. It is a mistake, therefore, to condemn as wholly wasteful the construction of smaller ships—say under 3000 gross tons—in this country during the war. While they are not as well adapted to our own trade as larger ships, they are of the tonnage with which the trades of the several seas which penetrate Europe are usually con-

ducted and in the proper places may be serviceable, especially in the near future. The merchant marine of a country is not to be judged by its total gross tonnage alone, but by its adaptability to the country's needs, and one of the sources of Britain's commercial importance has been the willingness of her shipowners to dispose of ships which on account of size, age, or other factors had ceased to become the most efficient instruments of commerce and to build newer, larger and better ships.

THE absolute and relative increase of American tonnage is the gratifying evidence of our determination to help win the war, in its way as noteworthy as was the raising and transportation of our armies to Europe, but in neither case were commercial results obtained. A considerable part of the tonnage now under the flag is not a source of maritime strength to us, but, if treated as our general business good sense would treat an analogous matter ashore, such tonnage may be so disposed as to add to the world's comfort and wealth, in which we shall share."

Inference aplenty may be drawn from this, but the most outstanding apparently is a severe indictment of the present shipping board in not adopting a more aggressive campaign to dispose of the less economical units of our merchant fleet. Since last summer the shipping board has not only ceased conducting an aggressive campaign to sell the war-constructed ships but has marked up the prices and asked congress to pass the so-called Greene bill. This measure would give the board five years within which to wind up its contracts and dispose of its fleet. Privately the supporters of the bill acknowledge that the time will be extended beyond five years before that period expires.

HOLDEN A. EVANS, president of the Baltimore Dry Docks & Ship Building Co., in outlining his ideas of the needs of the shipping world appears to have hit upon the exact plan now in the mind of the administration at Washington.

"Congress should lay out a shipping program covering five years," said Mr. Evans, "during which time the people could be educated on the importance of the shipping proposition and realize how important it is to the nation. For the first two years the ships would be sold at \$200 a ton, and any American who wanted them could go in and buy them at

that price. At the end of that period there would be a drop in the price. I would not suggest any definite figure. The price would depend upon conditions, but it ought to be sufficient to maintain the general American market, say around \$175 a ton. This price could be held for one or two years when there could be a further drop in price, and at the end of the five years, the remaining ships could be sold for what they would bring and the government get out of the shipping business. During the 5-year period, the unsold ships could be allocated to ports as they are allocated now, on a profit-sharing basis.

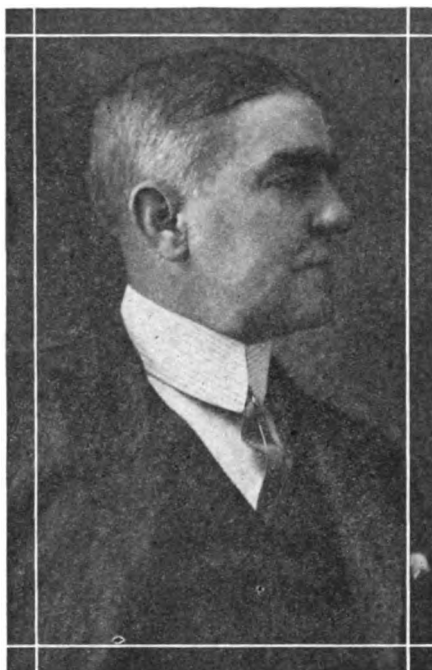
"This would give time for the establishment of new trade lines; it would give time for the education of the people to the importance of the shipping industry; it would give time for the average business man to learn the personal and business advantage of investment in ships; it would give time for the shipyards to do away with war methods and get down to an efficient basis on which ships could be built in competition with the Clyde while still maintaining the high wages of American labor."

The disinclination of the shipping board to sell its fleet is certain to react to the temporary benefit of the American shipyards. Private operators will still desire their own ships free from the encumbering terms of a charter on a government ship. They will learn furthermore that a ship specially constructed for their trade will be more economical and, therefore, more profitable. Today private operators are letting contracts for tankers and despatch freight boats. The Bethlehem Steel Corp. is going to build a large fleet of bulk carriers to take oil to Chile and bring iron ore back to Baltimore. The American Sugar Refining Co. is considering the advisability of having a fleet of its own to bring raw sugar to New York. Other large industrial traders are being converted to the idea of having their own fleet of specially designed ships. As the trade of the world begins to return to normal, these urgencies in shipping will grow in acuteness, and contracts for new ships are a certain result.

AT THE present moment the widened interest of American business men in foreign trade is the most potent factor in the shipping industry. These interests are learning that if they would deal abroad they must be assured of their means of communication. American agencies

abroad mean American ships on the high seas. Starving Europe has resulted in bringing to light many opportunities never realized before. For once it would appear that American business men are alive to the fact that they never traded with South America upon a basis equal to that enjoyed by either England or Germany in the old days. It may be some time before an American shipping line has the courage to let a contract for a leviathan, but even today new passenger-boat contracts are being let.

Prohibition is the indirect cause of new passenger-boat construction. Tourists who formerly flocked to



W. G. COXE
who is a consulting marine engineer, Philadelphia.
Mr. Coxe is temporary vice president and general manager of the Gloucester and Wilmington Works, Pusey & Jones Co.

Florida and other southern resorts in the winter are now going to Cuba, Bermuda and the West Indies. The bookings have been so heavy that whole ships have been sold out more than a month in advance. The traffic across the Atlantic has been so heavy that steamship companies have been unable to accommodate the traffic. It is impossible to forecast at this time the probable passenger traffic to the Latin-American countries. This is a development which may not bring business to American shipyards within the next few months, but it is a thing which will ultimately result in good to the shipbuilding industry.

Today the cry is for tankers, refrigerated ships, and other specially designed craft to transport the products of the United States and to

bring back the products of other countries in exchange therefor. This traffic is essential that the peoples of the world may exist. Costs of shipbuilding will receive greater consideration in 1920 than last year, but it will not be necessary for shipbuilders to shave profits so closely as it was in 1913. Ships must be had, and more ships.

Master Mariner at 24

The United States steamboat inspectors at Seattle recently issued an unlimited master's license to Alexander M. Peabody. The fact that Captain Peabody is but 24 years old makes him probably the world's youngest master mariner. Under his license he is eligible to command any American ship, of any size, anywhere on the seven seas. Captain Peabody states, however, that it is his intention to seek more sea experience before taking a berth as master. He now is second officer on the *ROBIN HOOD*, a 10,000-ton steel cargo carrier, first of the four steel ships of similar tonnage being built by the Skinner & Eddy Corp., Seattle, on its own account.

Captain Peabody spent two years in Cornell university before beginning his sea career. Then he entered the coastwise service. He made several voyages in the United States training ship, *RED JACKET*, one of the German ships seized by the government during the war. When the 8800-ton steel steamer, *WESTENER*, a product of J. F. Duthie & Co., was put in commission by the shipping board in February, 1918, Captain Peabody was appointed second officer. He remained on that vessel throughout the American war period. During this time the vessel operated continuously in the war zone. During his last eight months on the *WESTENER*, he served as first officer. His record as an officer stands clean and he has won the highest approval of his superiors.

Captain Peabody's rapid rise serves as an example of the excellent opportunity offered American youths who decide to make the American merchant marine their career. Comparatively few lines of endeavor ashore offer the chances for advancement open to young men who take to the sea with a determination to make good.

Completing a stormy voyage to the Hawaiian islands, the shipping board's training and cargo steamer *BROOKDALE* has returned to Seattle. The *BROOKDALE* carried several hundred apprentices who are being trained for the new merchant marine. It is intended to continue the *BROOKDALE* on this route carrying freight and schooling young men in the ways of the sea.

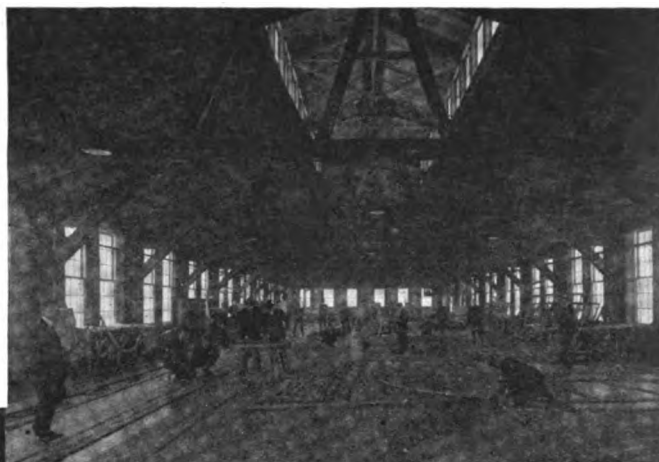
Shipbuilding in the South

BY HARRY H. DUNN

MANY southern shipbuilders, as disclosed in a recent survey, believe that the end of the war saw the beginning of the end of profitable shipbuilding in the South, especially that part of the South which borders on the coast of the Gulf of Mexico. Those shipbuilders who were fortunate enough to obtain contracts from foreign governments and from foreign shipowning and shipping corporations, are still at work. Some of them are even increasing their forces to meet their contracts. Those who were far sighted enough to transform their plants into ship repair yards, and who installed drydocks for handling large tonnage, are meeting with greater success than ever came to them while they confined their efforts to the construction of hulls. But those who believed a generation of American ship owners would arise—like Bryan's volunteer army—overnight, are still seeking contracts. Three or four shipyards, which from the first gave most of their attention to the construction of large auxiliaries, for use on the Gulf and in Latin-American trade even further south, are finding considerable work, with prospects for the sales of a number of this class of bottoms to corporations formed in the Latin-American republics.

This is the exact situation in the far South, from Tampa, Fla., all the way around the Gulf coast to Galveston, Tex., as outlined by a dozen shipbuilders and their agents, coming from as many sections of the South. These men feel that, as evidenced in the South, American shipping firms and shipping men have not risen to the opportunity, that enough of them have not sought to become ship owners, and those already owning ships have not done sufficient toward meeting the competi-

Where ships are laid out—Mold loft at the Foundation Co.'s plant on the Industrial canal, New Orleans.



Shipbuilding in Dixie—Plate angle shop at the Foundation Co.'s plant—Equipment is up-to-date.

tion of European, or even Latin-American and Oriental ship owners and operators.

Labor is cheaper in the South than it is in other parts of the United States. Outdoor shipbuilding can be carried on all winter and the streams are open for launching and outfitting at such points as Lake Charles and Alexandria, La., and Houston, Beaumont and Orange, Tex. Lumber is more plentiful than ever, because labor is more abundant to hew it from the Louisiana and Texas and Mississippi forests. Coal and iron and steel are being laid down in New Orleans, Mobile and other shipbuilding points, from the Alabama coal and iron fields, cheaper than it ever has been before, because of perfected inland waterway transportation. The opportunity for successful ship construction was never so great in the South as it is this winter, but the majority of the yards question the prospect of as successful a season as they had in 1919.

WHILE few American capitalists or American corporations have been ordering ships from the yards of the South, foreign corporations have not been so backward. The International Shipbuilding Co., Pascagoula, Miss., is doubling its capacity to handle an order for four steel steamships of 12,000 tons each from an Italian corporation. The International recently launched the

6000-ton steel steamer TORINO, for Italian order and has contract calling for the delivery of eight more sister ships by March 1, 1921. This corporation started its career early in the war by constructing 3500-ton and smaller auxiliary barkentines for an Italian corporation under direction of the Italian government. These orders were filled so acceptably that contracts were received for the 6000-ton steel steamers while the United States was still in the war. The company established a steel shipbuilding plant at Pascagoula, the wooden barkentines having been constructed at Orange and Beaumont, Tex.

This is an example of the shipbuilder who was fortunate enough to obtain foreign contracts. An example of the shipbuilder who was far sighted enough to convert his plant into a ship repair yard and drydock is offered by Ernest Lee Jahncke, who, as head of the Jahncke Shipbuilding Co., which established a plant for the construction of Ferris-type steamers for the shipping board at Madisonville, La., as soon as Uncle Sam got into the war, virtually closed the shipyard when wooden ships were declared out of style, and transferred his own tremendous personal activities to the Jahncke Dry Dock & Ship Repair Co., New Orleans. So great has been the volume of work offered this latter company that Mr. Jahncke has added an 8000-ton drydock to the yard's 11,000-ton, 3-section dock.

Still another example along somewhat similar lines, though originally established as a small marine repair plant away back in 1859, by Lewis Johnson, is the Johnson Iron Works, Ltd., New Orleans. This corporation, while it built six seagoing tugs for the government during the war, has never dropped its marine repair plant, at Algiers, just across the Mississippi river from New Orleans, and recently had to increase its force of men to 700. The company, up to date has completed approximately 150 steel and wood seagoing craft, river tugs, towboats and barges, a record for marine plants in the South.

The Foundation Co., which is constructing 9200-ton steel steamers for the French government, at its New Orleans yard, will complete these contracts and

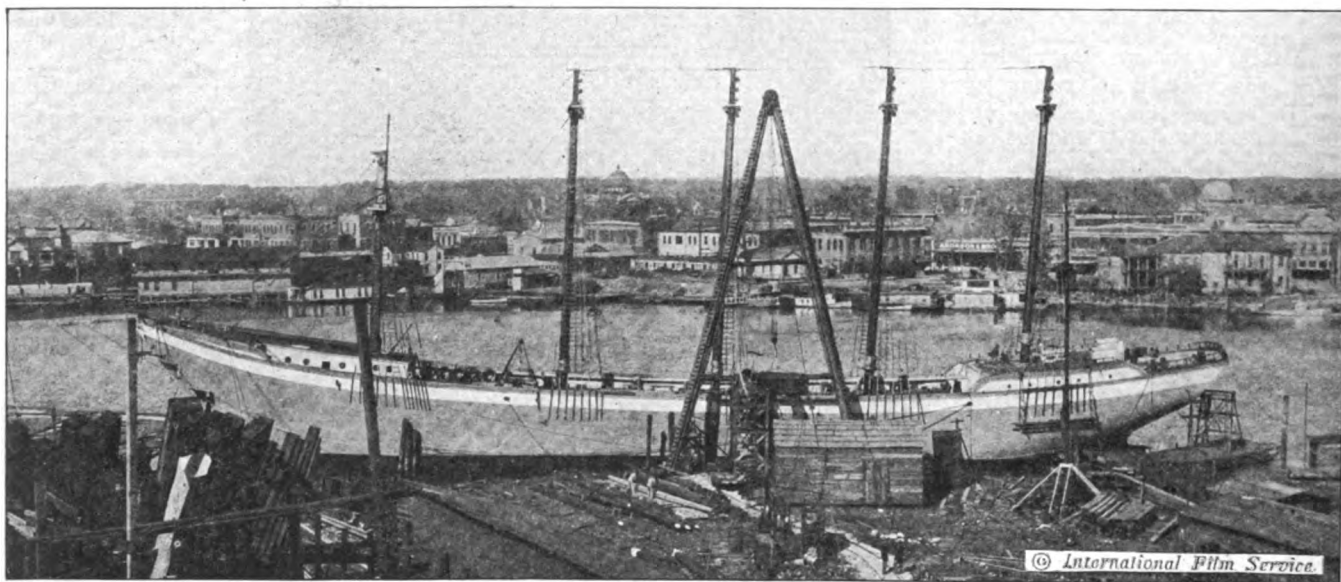
Miss., having completed and delivered three 3500-ton steamers, ALPACO, BROOMBOROUGH and BANARAN, to the shipping board, took over the fourth steamer, NIKA, and has completed it. With several New Orleans men, including Dr. Carlos A. Bermeo, Ecuadorean consul in the Crescent City, G. E. Hodge, president of the ship company that bears his name, has formed a ship-owning and operating company to establish service with the NIKA and other wooden steamers between New Orleans and the principal ports of Ecuador, Colombia and Panama.

These two companies—the National of Texas and the Hodge of Mississippi—are the first to endeavor to straighten out the shipbuilding-ship-selling tangle by forming companies to operate the

this corporation's tenth steel vessel. The Southern Drydock & Shipbuilding Co., recently launched the DELPHAS, a Ferris-type hull, successfully at Orange, Tex.

The Chickasaw Shipbuilding & Car Co., Mobile, Ala., controlled by the Tennessee Coal, Iron & Railroad Co., has access to the latter's fabricating plant for steel ship construction. The first hull built by the Chickasaw company, which is a subsidiary of the United States Steel Corp., was launched in December.

The South is tremendously interested in the disposal of the government's large fleet of merchant vessels. Many of these vessels are now allocated to southern ports. What the South desires is a definite and settled policy in



FITTING OUT A 3500-TON AUXILIARY BARKENTINE AT THE INTERNATIONAL SHIPBUILDING CO., ORANGE, TEX.

then seek private contracts. The Doullut & Williams Shipbuilding Co., New Orleans, is at work on several steel steamers for the shipping board. The value of these yards and much of their future work depends on the success or failure of the Industrial canal, when completed, as an inner harbor, and the ability of large hulls to pass through it and then out to sea by way of Lake Pontchartrain. This canal, which was to have cost \$3,000,000 or \$4,000,000 on original estimates, is now being completed at a cost of approximately \$20,000,000, and should be finished in November, 1921. No other shipyards have been established along it, and it is probable that none will be until the canal has been completed.

The National Shipbuilding Co., Orange, Tex., has purchased the four 5000-ton wooden ships, on which it was working, from the government and will complete them, having increased its force. The Hodge Ship Co., Moss Point,

vessels they themselves constructed. The result of the experiment is being watched with interest by all the shipbuilders and shipowners of the South.

The Alabama Drydock & Shipbuilding Co., Mobile, Ala., another corporation which turned rapidly to repair work, reports that it has \$90,000 worth of contracts for such work on hand. The Kelly Drydock Co., Mobile, is devoting its attention to ship repairs and dry-docking with success.

THE Pensacola Shipbuilding Co., Pensacola, Fla., which recently launched the NOCCALUCA, announces that the CITY OF SHANNON, a 7000-ton steamer, will be launched within a month after the new year. The RED MOUNTAIN, another big freighter built by the company, made her trial trip early in December.

The Oscar Daniels Co., Tampa, Fla., has launched the 9500-ton steel steamer UNICOI, with all boilers and machinery in place. The keel has been laid for

this regard—such as a shipping program laid out by congress for a definite period of time, say five or even 10 years, and not subject to the caprices of the changing opinions of any one man or set of men. But southern business men realize that the permanent solution rests with the development of the private investors' interest in ship construction and ship operation.

Late Marine Patents

Copies of any of the following patents can be obtained by sending 25 cents in stamps to Siggers & Siggers, National Union Insurance building, Washington by mentioning THE MARINE REVIEW.

1323249.—Ship-raising mechanism, John T. Cowles, Chicago.

1323474.—Stern-tube for ships, Francis Hodgkinson, Edgewood, Pa., assignor to Westinghouse Electric & Mfg. Co.

1323732.—Surfboat, Alton A. Allen, Fall River, Mass.

1323911.—Ship hoist, David S. Reynolds, Boston.

1323920.—Construction of ships, John H. Silley, Bickley, and Edward F. Spanner, Brockley, London, Eng.

British Shipping in New Year

Notwithstanding Long Delays in Reconditioning Merchant Vessels For Peace-time Trade, United Kingdom Shippers Face 1920 with Confidence

BY CUTHBERT MAUGHAN

(Shipping Editor, *The Times*, London)

MANAGERS of the British shipping companies operating liners face the new year in a happier frame of mind than that in which they have been living for some time past. Their relief is not due to any diminution in trading difficulties—some of these, especially in view of the scarcity of coal and rising working expenses, are increasing—but is attributable simply to the fact that they are gradually, although slowly, getting back the ships which have survived the war.

It deserves to be emphasized that during the past five years the majority of British liners passed completely out of the control and frequently out of the knowledge of their managers. The owners merely knew that their ships had become armed cruisers, transports, hospital ships or were employed for other war purposes. If all went well they received the regular rates of hire which had been arrived at as a result of conferences with government officials. When their vessels were destroyed by the enemy they received predetermined compensation.

Immediately after the armistice, a number of the mercantile cruisers were demobilized and sent to the shipyards to be reconditioned. This process has been an exceedingly slow one, for whereas the task of equipping the vessels for fighting purposes was spread out over more than four years of war, the bulk of the reconditioning work fell upon the shipyards all at once. As a specific instance of the time required, the Peninsular & Oriental liner *MANTUA* was released by the government from duty as a mercantile cruiser soon after the signing of the armistice. At the time this article was written—the end of December—the final touches on her were only just being completed. In other words she was out of service for a year after being released from war duty.

BEFORE the war the so-called "M" ships were the crack boats of the P. & O. fleet—they ranged between 10,000 and 13,000 gross tons. So far, since the armistice, only one other of this type of ship namely, the *MOKEA*, has become available for commercial service. With the sailing of the *MANTUA*, the P. & O. company is hoping to resume its regular fortnightly mail service to India and Australia. Before the war the P. & O.

and Orient lines each maintained a fortnightly service, together making a weekly service. The Orient line with fine vessels of the *OTRANTO* class, 12,000 gross tons, suffered heavily and is not yet able to re-establish its prewar service. The P. & O. company is relying upon assistance from the new ships *NALDERA* and *NARKUNDA* of 15,000 and 14,500 gross tons respectively, but it is doubtful if the line will be able to keep a fortnightly mail service to Australia going for some time yet. At the recent annual meeting of the stockholders of the P. & O. company, Lord Inchcape, the chairman, said that the company hopes to see all its trades normal again, with the mail services to the East, Far East and Australia restored to their old regularity within a short time. The fact that the government has not yet handed back to the company 10 of its best steamers is a great handicap to it.

SIMILARLY, the Royal Mail Steam Packet Co. is hoping in 1920 to establish a fortnightly service between Southampton, Brazil and Argentina. Before the war, a weekly service was being maintained by vessels of the "A" class of between 10,000 and 15,500 gross tons. This company also suffered very heavily during the war. Three of its best ships, namely, the *ARAGON*, *AMAZON* and *ALCANTARA* were destroyed by the enemy, and the *ASTURIAS* of 12,000 tons, which, as a hospital ship was torpedoed off Havre and had to be beached, is still in a badly damaged condition at Harland & Wolff's yard at Belfast. The Royal Mail company's schedule provides for sailings from Southampton as follows: The *ALMANZORA*, Jan. 9, the *ANDES* Jan. 23, and the *AVON*, Feb. 6. Thereafter a gap must be expected and a regular fortnightly service cannot be expected for some time yet.

To South Africa the Union-Castle Mail Steamship Co. before the war maintained a weekly service from Southampton. The liners left the port on Saturday afternoons and clockwork time was kept. All the mail steamers of this fleet were employed during hostilities as mercantile cruisers or transports. This company is fortunate in having had eight liners of between 7500 and 14,000 gross tons reconditioned since the close of hostilities and it expects to have three more ships returned to it very

shortly. The line is able to announce that a weekly service can now be maintained, although the vessels may not yet sail at fixed intervals of seven days.

In the north Atlantic the war losses were very heavy. Of the big ships available the *AQUITANIA* of the Cunard line, as is well known, is being reconditioned and fitted with oil burners. She is not expected to resume her place in the service before early spring. The *MAURETANIA* has been worked hard and is to be allowed a brief rest in January, so that special attention may be given to her engines. Later she is to be converted, like the *AQUITANIA*, for burning oil fuel, but it seems quite likely that she will not be taken off the service until toward the end of 1920. All the amenities of travel on the *AQUITANIA* which were removed are to be restored. The *OLYMPIC*, of the White Star line, will be returning to the north Atlantic service early this year. Her fine decorations were hacked out at the outbreak of war, and the task of making her fit for luxurious travel is proving a big one. The *IMPERATOR* which, for the present at any rate, is to be hired by the Cunard company from the British government, will prove an extremely valuable acquisition to the line.

Hitherto it has not been practicable to find accommodation for all the passengers wanting to travel across the north Atlantic, but the demand for berths now seems to be easier. The present view of British managers is that enough travel will develop throughout 1920 to keep the lines busy, but that they will be able to keep pace with it.

IN OTHER trades, the congestion of passengers has been and still is serious. Throughout the autumn and early winter months the lines serving India could not supply anything like the accommodation that was needed. The same conditions have applied to Australian trade, and the *MANTUA*, which sailed Jan. 10, could have been filled many times over. The congestion in the South African trade has been at least as serious as in any other route. At the moment of writing there is a waiting list of some 14,000 passengers, which the regular weekly sailings will now clear to the extent of about 900 passengers each week. In the South American trade the gradual return of the big ships will do much to

meet the demand. During the past few months prospective passengers have been thankful to get accommodations in any ship, no matter what her size. Plenty of work awaits all the passenger liners and their owners want them back as soon as they can possibly get them.

A matter which is causing all steamship owners in Great Britain and elsewhere anxiety at the present time is the movement on foot for governments to own and operate mercantile marines. The western Australian government has been an owner of trading ships for many years but the development of government intervention did not reach really formidable proportions until the formation of a line of steamers by the Commonwealth government of Australia in the summer of 1916. The nucleus of this fleet was a number of ordinary cargo steamers bought from British owners. These ships have since been augmented by a fleet of German ships seized in Australian waters at the outbreak of the war.

Following the Australian experiment came the ownership of a very large fleet of merchant vessels by the United States government. Finally, the Canadian government is instituting a mercantile marine with ships built in Canada since the outbreak of war and working under the title of the Canadian Mercantile Marine, Ltd. The Australian and Canadian government vessels have been placed in the hands of shipbrokers or shipowners to manage, and I believe the same course is gradually being followed by the United States government. Undoubtedly those governments which go in for shipowning are well advised to put their vessels in the management of firms which have all the technical knowledge and machinery for ship management. Incidentally such vessels get the advantage of participating in the use of berths allotted to the regular ownerships. This, in these times of grave congestion, is a very important consideration. At no time has the congestion in the ports of the United Kingdom been as bad as it is today.

UNTIL lately, ordinary cargo vessels might have to wait their turn, but the large companies, such as Furness-Withy Co. which has its own berths, could give immediate accommodation to their ships. At present even these companies cannot deal with the ships at once. The river Thames is literally crowded with ships, and instructions are being sent by wireless to ships at sea to wait at Southend at the mouth of the river, a hitherto unheard-of proceeding.

What owners really feel is that in facing government enterprise they have to encounter competition which has the whole of the resources of the nations

behind it. No efficient ship manager is afraid of competition represented by private enterprise. He can meet it, if worst comes to worst, by a war in rates, knowing that a time must come when owing to sheer lack of available resources the fight must come to an end. In the past, many such fights have taken place among British owners. While they proceeded rates were reduced. When peace between the owners was signed rates were advanced and the losses incurred during the struggle were made good. Some shippers might have gained out of the sharp cuts in rates, others, through depreciation of stocks, lost. Probably all, owners and shippers included, were extremely glad when normal conditions were restored. Where, however, a government is concerned shipowners cannot look with the same certainty to the end of the fight within a reasonable time. If a government chooses to raise funds from its peoples, it can continue a fight until such time as public opinion may call a halt.

INCIDENTALLY a government cannot enter into agreements with other lines in the same way as individual owners. For these reasons the present and prospective competition of governments is a cause of anxiety to shipowners. In his carefully worded speech, which is published in this issue, Lord Inchcape devoted considerable attention to state competition. Referring to the United States enterprise, he declared that if the government of the United States were out to tax the people to build up a mercantile marine at all costs, the outlook for the shipping industry of the United Kingdom would be anything but rosy. On the subject of the Australian competition, British owners feel that they are not being treated well by the commonwealth government. With the reasons for this belief American readers need not be troubled, at any rate at the present time. It is sufficient to say that Lord Inchcape, as spokesman for British owners, has given W. M. Hughes, the Australian premier, credit for the highest motives in proposing to start a government owned line of steamers, but has expressed his belief that Mr. Hughes' conception of what is good for Australia is wrong. Mr. Hughes has placed orders in the United Kingdom for five large passenger and mail ships, and at the recent meeting, the chairman of the P. & O. company suggested that the Australian premier should follow the example set by the British government and cancel or assign the contracts he has made. At one time a possibility was sensed that the British government might be induced to continue shipowning, but after the conclusion of the armistice, the cabinet showed its hand by selling to

private owners the large number of ships it had built or purchased during the war. The development of all the existing government enterprises will be watched with the closest interest.

Reference has already been made briefly to the high cost of coal. This has now assumed extremely formidable proportions. As compared with £0.17.6 per ton at which British owners could buy coal before the war the present price in London is £6.2.6, or about \$24.40. The MAURETANIA loads 5000 tons of coal which before the war would have cost rather less than £5500 (\$27,500). Today the cost will be about £30,600, or \$116,280 even at existing rates of exchange. Moreover, although the price is so extremely high, the quality is often poor. Shipping companies are often glad to get anything they can.

Not only is the cost high and the quality poor, but grave difficulty is found in getting supplies. At the present time vessels are being held up London and Liverpool, and many are likely to be kept waiting for coal for about a fortnight. This trouble is due largely to the congestion at the ports and railways, which led the coal controller to order that Liverpool, which has always depended on coal from Lancashire and South Yorkshire, should draw all her bunker supplies from South Wales. In the same way, whereas London depends in normal times upon the northeast coast of England for coal, she also now has to take her supplies from South Wales. The object of these regulations was to relieve the railways of traffic, since the coal could be taken from South Wales to Liverpool and London by sea. But, the effect of this diversion of traffic has been most serious for industry. South Wales has had more work thrown upon her than she could possibly deal with and transport has at the moment completely broken down. Shipowners were sufficiently unhappy about the congestion of merchandise at the ports, and they are now clamoring vigorously for some improvement in the coal situation. Urgent representations have been made by the leading shipping companies to the ministry of shipping on the subject.

ANOTHER point which is causing shipping companies and merchants anxiety is the epidemic of pilferage of cargo, which now appears to be going on to a large extent throughout the world. Claims upon owners and underwriters are extremely heavy. Shipowners in the South African trade have just issued notices urging shippers to take special care to pack their

goods securely, and merchants, represented by the chambers of commerce in London and Glasgow are urging owners to amend bills of lading, so as to let heavier liability fall upon the owners. Quite recently the Australian lines doubled their liability from £100 per ton and £5 per cubic foot to £200 per ton and £10 per cubic foot. Certain lines trading to the Far East have also similarly increased their liability. Now a movement is under way to get lines engaged in other trades to follow suit. But alterations in bills of lading clearly will not, by themselves, reduce the present evil of pilferage. They will only throw the responsibility from one side to the

as meat and tobacco, to name only two out of the many commodities. Discussing the surplus of meat, Sir Thomas Mackenzie, the high commissioner for New Zealand, has just pointed out publicly that the people have got out of the way of eating as much meat as formerly, and that the public will require considerable inducement before it will again eat meat at the same rate. The only way that it can be done, he considers, is by a reduction in price. The same considerations would seem to apply to other articles of general consumption. If this hesitation to buy continues, it may have its effect on the demand for shipping space in the immediate future.

healthy development of trade between the United Kingdom and all lands overseas during 1920.

Launch Cargo Ship

Harland & Wolff, Ltd., Belfast, Ireland, recently launched the *MAINE*, a standard cargo ship of the N type building for the Atlantic Transport Co., Ltd. She is similar in size to the previous vessels of the class built at Queen's island, her dimensions being 412 feet long, 55 feet beam, gross tonnage 6500. Efficient gear is installed for dealing with a large cargo and the arrangements for working the ship are of the most up-to-date type.



TWO OF THE BIG GERMAN LINERS ALLOCATED TO THE UNITED STATES BY THE ARMISTICE COMMISSION FOR TROOP TRANSPORT AND NOW BEING TURNED OVER TO ENGLAND—MOBILE IN THE FOREGROUND AND ASTERN OF HER THE ZEPPELIN

other. At the present moment a proposal is under consideration by merchants and the chamber of shipping for forming a special police control for the port of London.

A large number of British cargo vessels are still being directed by the British government to load wheat for the United Kingdom on terms which are far below the market rates. An outstanding feature of the freight situation at the end of December was the number of ships which were being directed to load wheat in the river Plate at £3.26 per ton, which compares with £9.10.0, secured by foreign vessels for Italy, and £8.15.0 for other European destinations.

British ports are full of commodities which are not going rapidly into consumption. This applies to such articles

High prices, as compared with the prewar level, are one of the main features of life in the United Kingdom at present. Conditions have not yet adjusted themselves. The earnings of all are not yet sufficient to enable them to buy at high prices. The exact future course of events is not yet clear. One logical outcome of high prices in the producing countries would appear to be a large emigration from the United Kingdom to the lands which are not yet highly developed. Such a movement on a large scale would affect the nature of the cargoes carried, but a large increase in the population of Canada, South Africa, Australia, New Zealand and the United States would be bound to stimulate sea transport. In any case, British ship managers anticipate a

The new vessel will be fitted with triple-expansion engines, steam being supplied from three large cylindrical boilers working under forced draft. The machinery and boilers were built by the company and were placed on board immediately after the launch. This is the first vessel to be launched by Harland & Wolff from their new yard at Belfast. The *MAINE* will shortly be followed by another vessel of similar type.

France is still building concrete ships. During December, the *COMAFRAN II* second of a fleet of seagoing merchant vessels, was launched at Neuilly, on the Seine, near Paris. These vessels, it is set forth, are able to cross the English channel and to engage in coastwise trade as well as navigate the Seine.

France Lays Plans For Future

National Interest Aroused in Providing Merchant Marine—Policy of Replacing Tonnage Lost During War—Lack of Materials Proves Handicap

BY FRANCIS MILTOUN

French Correspondent of The Marine Review

WHILE the future of France does not lie on the sea, her coast line is by far the most extensive of any European power, her ports of magnitude—a certain magnitude at all events—the most numerous, and her inland waterways second only to those of Germany.

The war has completely overthrown her past projects and to a large extent prevented that development which, in the natural course of events, would have come into being. Both passenger and cargo traffic under the French flag has received such a blow that it will take years even to approximate the means necessary for the country's economic need, unless indeed she is to be tributary to foreign bottoms, as she was before the war. That of itself is no reason why French shipping should not have aspired to a more prominent part than it has heretofore had.

THE French merchant marine was insufficient before the war, and with the country's need of foreign relations and communications greater than ever the situation is now still more acute. Three billion francs form the sum conservatively required to meet the urgent need.

French merchant ships on Aug. 1, 1914, had a tonnage of 2,500,000. Dur-

ing the war nearly 1,000,000 tons were destroyed and 130,000 tons lost from other causes. Of this, between 1,000,000 and 1,200,000 tons, 400,000 tons have been recuperated by purchase abroad and to a small extent by production in French yards. In addition, England has promised the loan of 166,000 tons for a period of three years, the operation, upkeep and depreciation charges to be at the expense of the French.

The government estimates 5,000,000 tons as the minimum of its requirements to meet insistent economic needs. Helping out on the above figures are such ships as will be turned over by the United States shipping board from those ordered in America which were requisitioned during the war—125,000 tons according to French figures, to which will be added 135,000 tons of captured interned German ships, besides such a division of other German ships as may be apportioned by the allied commission. These specific figures do not bring the sum total up to the tonnage possessed before the opening of hostilities.

Actually on order in French or foreign yards, or projected, are 219 steamers, with a tonnage of 1,242,659 and a cargo carrying capacity of 1,516,748 tons. Among these are 52

passenger vessels, 15 of the *mixte* type, 136 cargo boats, 11 auxilliary sailing and engined craft, five sailing vessels.

French yards are written down for 35 passenger liners, 14 of the "mixed" type and 21 cargo boats. Somewhat egotistically, the French claim that this is an indication that the highly perfected construction is that which their yards are best able to turn out, whereas the 115 cargo boats from abroad represent the rough stuff lacking the *finesse* of touch which the French engineer and artisan is supposed to bring to his handiwork.

ACTUALLY, at this writing, but two French built passenger liners have been delivered and another announced for delivery early in 1920. A "mixed" type was delivered at the end of 1919 and a second will be completed by the end of 1920. Three cargo boats are already in service and 20 additional were delivered by the end of 1919 and 60 will be ready during 1920. Such is the program of ships built by or for French account and this is a long way from doubling the French tonnage of before the war as is demanded.

A shortage of raw material, as it has existed since the armistice and as it may exist for a long time to come considering the labor and political unrest of the moment in France, may be expected to seriously compromise the indigenous French building program. This makes it all the more imperative that the foreign pro-



Port of Bordeaux, France, with shipping at anchor in the Gironde. This port expects an increasing foreign trade

French government
arsenal at Brest where
it is proposed to build
merchant vessels which
France needs



gram should be carried out in *toto*, with perhaps an increased tonnage as well. This implies also to the matter of financing these foreign orders which in the present low rate of foreign exchange of the franc as compared with the dollar and pound is more than serious and already is proving an upset of the financial budgets of both French government and private shipowners. At that, cargo boat tonnage is estimated at \$200.

WITHOUT putting the proposition into a phraseology which implies out and out socialism or subvention for all French shipping, it is certain that French companies and French builders alike have been very chary of putting forth their best efforts until the government makes known its definite attitude. A more or less effective effort at nationalization of the French merchant fleet was undertaken during the last months of the war by M. Buisson, the minister of merchant marine, but not wholly with success, judging from the complaints and criticism which it brought up.

Today, conditions have changed, it is true, but instead of a militant unrest we have a social, political bubbling of

the cauldron which may indeed mean toil and trouble for French shipping circles for a long time to come. M. Claville, the minister of transportation, is still agitating his project for a nationalized merchant fleet of imposing proportions, so imposing that it means nothing less than doubling the prewar tonnage of 2,500,000. This means a tax on the national budget and it means a tax on the private purse of all the population and for the most part the population is taxed almost to the limit at present. Also, for the most part, it does not see (when it sees at all) why, when France was so nearly a self-contained and self-supporting country before the war it might not become so again. Hence, wherein the need since it is not recognized that the country's future lies on the sea? It is almost a paradoxical situation.

Government aid through the government arsenals, as if they were never more to build warships, which remains to be seen, may become an

important factor. Expert investigation has proved—to its own satisfaction at least—that from July, 1919, to July, 1920, they may be counted upon to put in the water 200,000 tons; for the next 12 months, 500,000 tons and for the third period, 600,000 tons. It's a beautiful, theoretic program but the French are not yet convinced. In spite of the fact that the naval programs of all nations are all more or less in embryo, there is at least work of that nature in hand in France sufficient for the present to keep the government yards of Brest, Lorient, Cherbourg and Toulon busy.

HOWEVER, private yards are busy to capacity, but again the delays attendant upon the receipt of raw materials, of combustibles, of transport and of labor—and the cost of all these elements—are by no means known quantities. Thus the best that can be looked for is, unquestionably, that any program already established will suffer delay in completion. And delay is dangerous, at least it is dangerous for the financial aspect of the problem and the financial problem itself is the biggest thing in sight in France today.

The French merchant fleets of Sept. 1, 1914, and at the date of the armistice, according to statistics of the French customs house authorities, is shown in the accompanying table.

War losses of overseas ships totalled 194,304 tons net of steamers and 136,556 tons net of sailing vessels. Of all French shipping companies the Messageries-Maritimes met the greatest losses, with 11 of its fleet of passenger boats missing. The Cie.

French Merchant Fleet Statistics

		1914	1918
		Number of vessels	
Coastwise fishermen	(sail)	10,895	7,251
Coastwise fishermen	(steam)	409	194
Newfoundland and Iceland fishermen	(sail)	306	62
Newfoundland and Iceland fishermen	(steam)	9	1
Coastwise	(sail)	1,122	1,987
Coastwise	(steam)	170	141
Coastwise international	(sail)	111	193
Coastwise international	(steam)	294	278
Deep sea	(sail)	220	136
Deep sea	(steam)	246	163
Pilotage, tugs and port services	(sail)	285	184
Pilotage, tugs and port services	(steam)	487	485
Yachts	(sail)	180	59
Yachts	(steam)	102	43
Ships unemployed throughout the year, the figures of those of the last column including those in the employ of the government, working for government account in the navy or otherwise	(sail)	2,563	4,406
	(steam)	218	537

General Transatlantique suffered little from actual loss of ships.

Raise Handling Charges

Recent demands for a national minimum wage of 16 shillings for an 8-hour day were made by the National Transport Workers' federation, England. According to Lionel A. Martin, of the London Waterside Manufacturers' association, the demand means an increase of 37 per cent over the present wage scale which was fixed last April. If to the actual increase in wages is added the demands made in regard to conditions, the increase can be regarded as

amounting to approximately 50 per cent.

In 1914, the cost of unloading and loading goods to and from vessels in the port of London was 49 cents per ton. Today it is \$1.61 per ton. If the additional demands are granted the cost will rise to \$2.40 per ton. In addition there would be an increase in expense in handling goods at the wharves, quays, warehouses, etc. In the case of the port of London, this additional demand would result in increasing the men's wages, at present 11s 8d (\$2.80) a day, to 16s (\$3.84), which, on the week, amount to 23s 10d (\$5.72). The men's wages at present are 6s 2d (\$15.40) per week; the increase would bring

them up to 88s (\$21.12). It was perfectly obvious that if these demands were acceded to it would be necessary for the port of London authority to request the ministry of transport to sanction a further heavy increase in dock, wharf and warehouse charges on top of the existing 85 per cent surcharge on prewar charges.

The capacity of Japanese shipyards for 1920, according to the *Japan Advertiser*, is estimated at 1,300,000 tons. Official investigations indicate a construction demand of 800,000 tons. This is 100,000 tons more than were constructed in 1919.

Italy Has Big Shipbuilding Plans

BY OUR FRENCH CORRESPONDENT

ITALY has never been considered as a first class maritime power, either in respect to warships or merchant vessels. Yet Italy has the greatest relative coast line of any European country and it gave to the world Marco Polo and Christopher Columbus, to mention but two whose names are linked with America, adding if you like that of Amerigo Vespucci also.

Actually, Italy's chef d'oeuvres of ship construction are in no way inferior in magnitude or excellence to those of the first of the world's shipbuilding powers. Indeed, they are far ahead of those of France, its relatively greater neighbor. If two modern examples are wanted one has only to refer to the dreadnought DANTE ALIGHIERI and the Veloce liners PRINCIPESSA MAFALDA and TOMASSO DI SAVOIA. During the war, Italy's merchant marine suffered serious losses, due to the submarine warfare of the central powers and, today, the Italian shipowners are making heroic efforts to fill the void and add to their ranks that Italy may come to be reckoned as one of the world's first class shipping powers.

Shipbuilding in Italy suffers from many and varied handicaps unknown in America or England, or even in France. Primarily this is in a shortage of native raw material. With respect to coal, an utter lack exists, while the iron mines of Elba and the Appenines are by no means sufficient to supply Italy's important iron and steel plants of which the most notable, Ansaldo, takes a near rank to the first and most efficient of contemporary shipyards.

From 1915 to 1919, the former the year of Italy's entry into the war, the national shipyards constructed 32 merchant steamers with a combined gross

tonnage of 181,881, divided as to yearly output as follows:

Year	Number	Gross tonnage	Net tonnage	Capacity tons
1915	3	24,906	15,230	19,700
1916	8	51,924	31,090	60,277
1917	8	38,228	23,720	47,425
1918	13	66,823	38,361	84,010

High line as to carrying capacity was in 1916 when the average was 7534 tons. The size of vessels is an essential element in the construction or acquisition of freighters by a country, the bulk of whose intercourse with the outside world is by sea.

Upon the cessation of hostilities, a marked current of Italian public opinion inclined toward the immediate construction of an adequate merchant marine under the national flag. Thus was accelerated the country's shipbuilding facilities, the results of which are shown in the launchings of the first six months of 1919, as follows:

The Ansaldo yards, Sestri-Ponente, turned out two steamers of 5200 gross tons for the Soc. de Navigazione.

Bacini & Scali, Naples, launched one steamer of 2250 gross tons.

Orlando, Leghorn, one of 4550 gross tons.

Basini, Riva Trigoso, one of 5400 gross tons.

Finally, of those already laid down, the following were more or less approaching completion:

Where building	Tonnage
Pietra-Ligure	5,500
Voltri	16,440
Sestri-Ponente	44,700
Corniglio	10,400
Genoa	11,800
Riva Trigoso	19,850
Muggiano (Spezia)	38,660
Leghorn	12,000
Portovecchio (Piombino)	5,500
Pozzuoli	7,800
Napoli	7,850
Palermo	22,000

Taranto	16,750
Ancona	5,860

This Italian effort of afterwar accomplishment shows once again how much more energetic is the northern Italian workman than his brother across the Alps in southern France, each in the same latitude. The shipyards of south France, at Toulon, at La Seyne, at La Ciotat, Marseilles and Port de Bouc are largely run on Italian recruited labor, considered more adaptable than the indigenous provençal variety of the hinterland of the Mediterranean coast. It proves once again the Italian will to do in the terrific struggle which is going on all over war-rent Europe.

Italy's industrial system is modern, due largely as to her shipbuilding program of today, to the early efforts of Benedetto Brin a quarter of a century ago. He first endowed Italy with her ocean liners which brought foreign shores to her door. Italy, geographically, is bound to play an important part in the development of the Near East regardless of peace treaty mandates. Already hers was the language of commerce throughout the Echelles of the Levant, from Constantinople to Tripoli, from Fiume to Beyrout. Central and southeastern Europe can no more get along without Italy than can the Caribbeans without the United States. Italy's entire prewar debt was something like 13,000,000,000 lire; today her exterior debt alone approximates 16,500,000,000, largely advances by the United States and the allies. Italian shipping will go farther and faster toward reducing this than any other of her industries, though that of the automobile is perhaps the next most important.

Europe Building Motorships Fast

Over Six Score Large Steel Vessels of the Liner Class Under Construction—Innovations in Engine Design—Air Compressor Eliminated

ALTHOUGH the full results are not yet evident, since the armistice, there has been an extraordinary increase in interest in motorships throughout Europe. The reasons for this development are twofold. In the first place, shipowners have noticed that firms such as the East Asiatic Co., the Glen Line and the North Star Co., which in the past have been pioneers in motorship owning, are evidently so convinced of the value of this type of vessel, that they are, for the most part, building motorships to the entire exclusion of steamers. Secondly, the increase in the price of coal, combined with the difficulty in many cases of obtaining reasonable bunker supplies without delay, has led all shipowners to consider the employment of oil fuel, and even where internal combustion engines have not been ordered, a large majority of new ships are being fitted to burn oil fuel. Also quite a large proportion of existing steamers have been converted to oil fuel.

IT IS not difficult to show what economies may be effected in the fuel bills of ships fitted with diesel motors under certain conditions now existing. Take a vessel trading to the East for example. The price of bunker coal at English ports varies from 60 to 110 shillings per ton (\$12 to \$22), at Mediterranean ports, at Port Said, and on the Suez, the average figure is in the neighborhood of £8 per ton (\$30). For any steamer, therefore, trading to India or China, the price of coal throughout the whole voyage will work out at about £5 per ton (\$19); on the other hand, the cost of oil fuel bunkered at an eastern port, close to the oil fields is now under this figure. If we assume the cost of oil and coal to be the same, economy of the diesel engine is still a factor to be reckoned with. In a 10,000-ton ship, this may represent an economy of about £10,000 (\$385,000) on a round voyage to the East and back.

These figures are sufficient to explain the interest now being shown by British shipowners in this new development, but so far as Scandinavian owners are concerned, the motorship is in a still more advanced position, since there have of late been enormous difficulties in obtaining sufficient bunker coal in Norway, Sweden and Denmark. The price has frequently

risen to £12 per ton (\$46) and even more. It is, therefore, not surprising to learn that the only reason why motorships are not being built in those countries, on an even larger scale than at present, is owing to the limitations of the ship and engine-building works. Every firm which has had experience in the past in the con-

Where America Lags

THE reason for the indifference of the United States shipping board toward the construction of motorships fitted with high-economy, internal-combustion engines of the diesel type has never been satisfactorily explained. The board, however, must assume a large share of the responsibility for American backwardness in this direction. In the meantime, Europe is forging ahead fast in this new field of marine engineering.

The accompanying article, written by one of the foremost authorities on motorships in Great Britain, discusses the great developments now under way on the eastern side of the Atlantic. The author points out that including Italy there are 128 seagoing motorships aggregating upward of 800,000 tons now being built in Europe. Most of these vessels are of the large liner class. Several are of 13,000 tons, much larger than any being attempted elsewhere in the world. Some interesting developments in diesel engine design are also taking place in Great Britain and Europe, the outstanding features of which are pointed out by the author.

struction of motor vessels, has an order book that is full to overflowing.

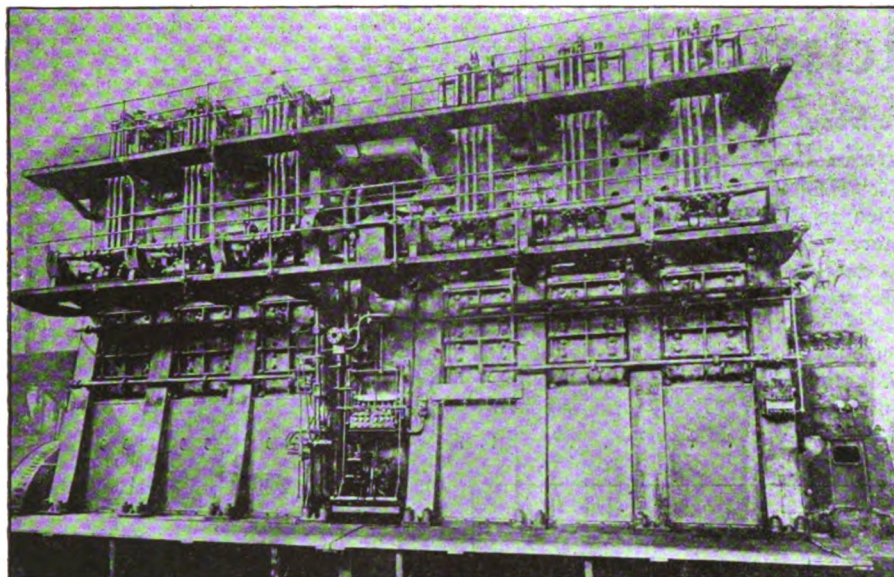
In order to show what is now being accomplished, a few statistics of the motor vessels contracted for and under construction may be given. For Norwegian owners, 22 ships are being built of which 18 are of about 7000 tons deadweight, fitted with 3000-horsepower machinery, while four are of 10,000 tons with higher powered engines. The Danish East Asiatic Co., Copenhagen, is building 17 motorships, to add to its existing fleet of 13 vessels; many of these have a deadweight capacity of 13,000 tons and are

fitted with machinery of 4500 horsepower. For Swedish shipowners, 19 motor craft have been contracted for recently, varying between 7000 and 10,000 tons with engines from 2600 up to 4000 horsepower. In Great Britain, about 20 diesel-engined ships have been ordered, mostly of 10,000 tons deadweight, but including four 13,000-ton ships for the Glen line. The latter will be equipped with twin-screw machinery, of 6400 indicated horsepower and will thus be the largest and highest powered motor vessels yet constructed. All of these large craft are due for completion before the end of 1920, and it is believed that even larger liners will shortly be laid down.

IN ADDITION to all the motorships enumerated above, there are a large number of orders for similar vessels on hand in Italy. Although full details of these craft are not available, it is stated that no fewer than 50 standard motorships are to be built all having a deadweight carrying capacity of 8100 tons, fitted with twin screw engines of 2200 brake horsepower and similar in most respects to the two vessels, ANSALDO SAN GIORGIO I and ANSALDO SAN GIORGIO II, recently completed and placed on the Italian-South American run. As coal costs about £8 per ton (\$30) at Italian ports, the Italian shipowners have good reason for pinning their faith to the motorship in the visible future.

Altogether the total deadweight tonnage of motorships under construction in Europe is somewhere between 650,000 and 900,000 tons. These figures should be sufficient to prove to the skeptical that the motorship is considered in Europe to have passed beyond the experimental stage.

One of the most noteworthy facts in connection with motorship progress in Europe is the variety of types of diesel engines now being built for installation in cargo and passenger ships. To mention only a few of the world-famous British firms which are playing their part in this development, Harland & Wolff, Belfast, Ireland, are building the Burmeister & Wain engine; Sir W. G. Armstrong & Whitworth Co., Newcastle, England, the Sulzer type; Vickers-Petters Ltd., Ipswich, England, one of its own designs; Sir William Beardmore & Co., Glasgow, have taken up the Tosi



A 2250-HORSEPOWER BURMEISTER & WAIN DIESEL ENGINE—TWO OF THESE ARE BEING INSTALLED IN A 13,000-TON MOTOR SHIP FOR THE EAST ASIATIC CO.

Italian engine; William Doxford & Sons, Sunderland, England, are constructing a particularly interesting opposed-piston motor developed from the Junkers design, while the North Eastern Marine Engineering Co., Wallsend-on-Tyne, England, is building Werkspoor diesel motors under license from the Dutch firm.

The most popular type with ship-owners has hitherto been that operating on the 4-cycle principle, particularly the Burmeister & Wain and Werkspoor engines, which are to be installed in the majority of the motorships now under construction in Europe. Both of these types have been standardized. They are built in a relatively small number of models, so that the manufacturers will thus be able to gain all the usual advantages of quantity production. For instance, the Werkspoor company is building 19 engines of one type, each having six cylinders, and those who are conversant with the design of diesel engines, will recognize the amount of repetition work that is involved in carrying out these orders. Little doubt can exist that the increasing development of marine oil-engine construction will lead to a far higher degree of standardization than has ever been thought possible. Already marine diesel engines of the 4-cycle type have been standardized up to 4000 indicated horsepower; an 8-cylinder motor of this size has a bore of 800 millimeters and a stroke of 1200 millimeters.

Some of the novelties in design, in the newer types of British diesel engines, are of the greatest importance, representing as they do, entire departures from orthodox practice. Both Vickers and Doxford in their motors, which have been referred to, are dispensing with the old system of injecting the fuel by

means of highly compressed air and are employing a mechanical pump for the purpose. This eliminates the 3-stage air compressor working at about 1000 pounds per square inch which is usually employed with diesel engines, and to this extent is an advance upon previous design, although some doubt is still expressed whether the system is equally satisfactory with the lower grades of fuel. Another modification is employed in the Doxford engine, which operates at a compression pressure of less than 300 pounds per square inch, against the normal 480 pounds per square inch in the usual design. This is effected by maintaining the top of the piston at a high temperature. The consequence is that the sections of the motor are lighter than if the higher pressure were adopted,

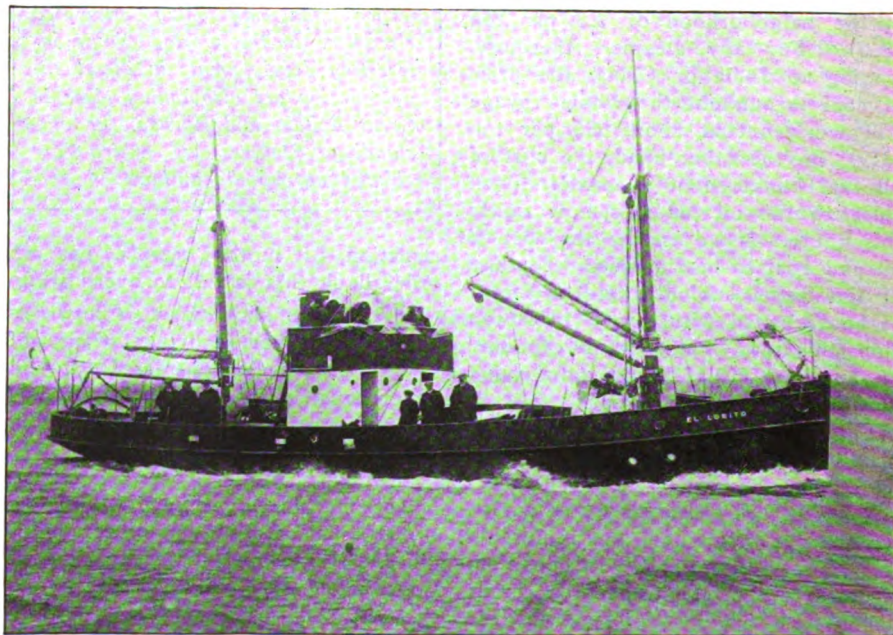
the saving in weight naturally reflecting on the cost of production.

Scotts Shipbuilding & Engineering Co., Greenock, Scotland, is developing a completely new type of engine, which is virtually a combination of the diesel motor with the steam engine, the steam being raised from the heat in the jacket water and the exhaust gases being used on the under side of the piston for producing additional power. This arrangement gives high efficiency and is said to have the additional advantage of facilitating reversing.

All the motorship developments now proceeding in Europe are in the direction of fairly large and, in many cases, relatively fast vessels from 6500 up to 13,000 tons, unlike the policy in America which leans at present toward auxiliaries or full-powered vessels, of not more than 4000 tons deadweight carrying capacity. It is believed that the most hopeful possibilities for the future, for the application of diesel engines lie in the direction of larger boats and plans are already being laid for 15,000-ton or 16,000-ton ships equipped with triple screw machinery of 12,000 horsepower.

At Rangoon, India, recently, an auxiliary sailing vessel of 1400 tons was launched. Her engines are designed to burn crude oil. She is built entirely of first-quality teak and only Burmese labor was employed in her construction.

The Cunard liner *AQUITANIA* is being equipped with an oil fuel burning outfit to take the place of her coal-fired furnaces. Greater operating efficiency is expected from the change while the engine room crew will be reduced from 350 to 50 men.



EL LOBITO, ONE OF THE SMALLER MOTORSHIPS UNDER CONSTRUCTION IN GREAT BRITAIN BY JOHN I. THORNYCROFT

Launch Tanker in Narrow River

Vessel Was Slew'd Broadside by Means of Anchors Cabled From the Stern — Preparatory Calculations Worked Out Satisfactorily

SUCCESSFUL launching of vessels in restricted waters calls for careful preparatory calculations, otherwise the vessel is liable to be injured by ramming her stern into the opposite bank. Many devices have been used to check the headway of vessels after taking the water, some elaborate and others simple. The means recently employed by the Terry Shipbuilding Corp., Savannah, Ga., in launching the 7500-ton tanker DARDEN consisted of slewing the vessel broadside by means of anchors cabled from the stern. The launching was an entire success, the procedure being as follows: Start of the operations was made at 12:01 a. m. when the work of cleaning, drying and greasing the ways was begun. In this work, the men followed the tide as it receded. At 7 a. m. the launching crew reported for duty and started to pull the grease plates. At 7:55 came the first rally on driving in the wedges. Care was exercised to make sure that the vessel rose evenly. Five minutes were consumed in the first rally. After a rest of five minutes, the second rally of five minutes took place followed by a rest of five minutes. Then came the third and final rally at the conclusion of which the wedges were sufficiently driven home and the vessel reported clear of her keel blocks. Next the toggles between the sliding ways and ribbands were removed by each berth gang. Then a pint of oil was poured in each space left by the re-

moval of the grease plates. At 8 a. m. the work of splitting the keel blocks and removing the necessary cribbing was begun. By 8:45 a. m. all the keel blocks were out with the exception of the last 12 and observations and reports of all creeping were made. Work on removing the forward keel blocks was begun at 9 a. m., the work being stopped when the creeping exceeded $\frac{1}{2}$ inch. The dog shores were then removed and all men ordered out from under the vessel. The releasing device consisted of tie plates made of 20.4 pound boiler plate rigidly bolted, one end to the standing ways and the other end to the sliding ways. Six

the point opposite the Terry company's yards, being but 600 feet from the end of the ways to the opposite bank. As the DARDEN is 405 feet overall, the space in which to snub her was extremely limited. The snubbing was carried out through the use of bower anchors as follows: No. 1 anchor, weighing 4025 pounds, was attached to 150 feet of 7-inch Manila hawser, led through the forward starboard chock to the bitts on the fore-castle deck. No. 2 anchor weighed 7400 was bolted to the side of the ship at the second deck between the frames that support the watertight bulkheads. Arrangement to release the chain from

inches clearance was allowed between the ends of the ways. Hydraulic jacks were installed as a precautionary measure for sending the vessels down the ways in case she did not start of her own accord. Their use in this case, however, was not necessary. The vessel was released by burning through the tie plates by means of acetylene torches. This was begun at 9:12 a. m. and at 9:15 the plates parted and the vessel started toward her native element without a hitch. She was christened by Mrs. George Baxter, wife of the Terry company's general superintendent. The vessel taking the water and the launching party is shown in Fig. 1. Details of the snubbing arrangement and how the vessel behaved after she took the water are shown in Fig. 2. The

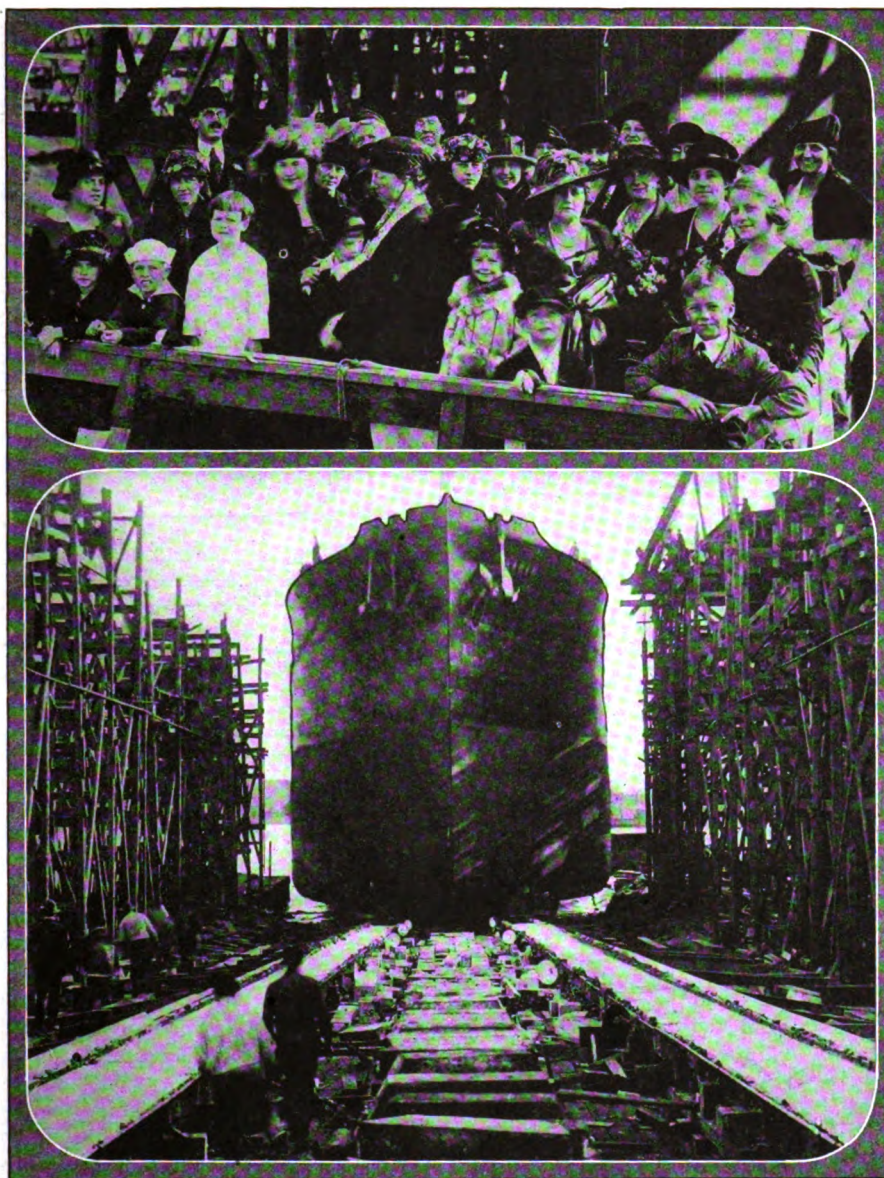


FIG. 1—THE DARDEN, A 7500-TON TANKER TAKING THE WATER AT SAVANNAH, GA., AND THE LAUNCHING PARTY

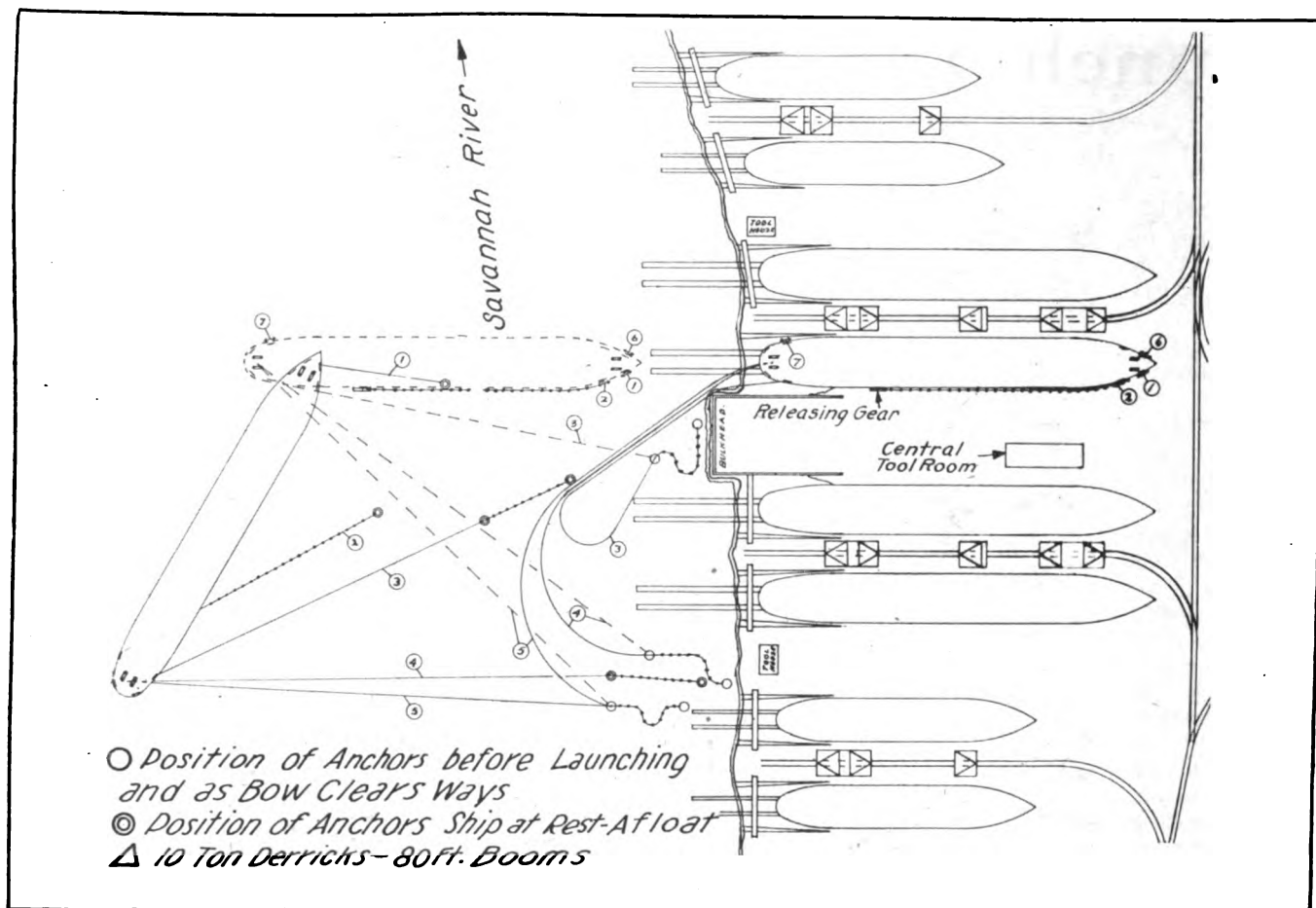


FIG. 2—DIAGRAM SHOWING HOW THE DARDEN BEHAVED AFTER TAKING THE WATER—THE RIVER HERE IS BUT 600 FEET WIDE

the upper deck was provided by a pelican hook and was for the purpose of letting go No. 2 anchor in case the vessel brought up too quickly. It was not used, however, until the ship came to a standstill when it was released with the other anchors to enable the tugs to take the ship to the fitting out dock where she was tied up and the crew dismissed at 10:22 a. m.

No. 2 anchor was held in place by a rope passing through the after starboard chock to the bitts on the fore-castle deck, the ropes holding both No. 1 and No. 2 anchors passing over a chopping block, to be cut as explained later. No. 3 cable was $1\frac{1}{4}$ inches x 400 feet long and ran from the forward chock on the starboard side of the poop deck to the first anchor weighing approximately 4025 pounds. A second anchor weighing 4725 pounds was also attached to this cable with 90 feet of chain laid so that the first anchor would drag 75 feet before taking up the second.

No. 4 steel cable, $1\frac{1}{4}$ inches diameter x 500 feet long and also led from the stern frame through which it passed to the after chock and towing bitts on the port side of the poop deck to an anchor weighing 4700 pounds while a second anchor weighing 4725 pounds was attached with 90 feet of chain

so laid that the first anchor would drag 20 feet before the second one was picked up. Anchors No. 6 and 7 were lashed to the port side ready to cut loose in emergency but they were not used.

Just as the vessel left the ways, anchors No. 1 and 2 were cut loose and cables 3, 4 and 5 were pulled up tight on their first anchors, as the dotted outline in Fig. 2 shows. This caused the ship to swing around and to come to a stop. This is shown in the solid outline in Fig. 2. Her bow was about in line with the ways and she had moved less than her length. All anchors dragged to the positions shown by double circles in Fig. 2 except those attached to cable 5. The first anchor on this cable formed the pivotal point on which the ship swung. It moved less than three feet while the second anchor was not disturbed. Floats were attached to all the anchors and cables so that it was a simple matter to locate them after being cut loose from the vessel.

Curtails Expenses

With the object of cutting down expenses to a minimum, Chairman Payne of the shipping board has reduced the board's force by 50 per

cent since he entered office on Aug. 15, 1919. Officials and employees in the division of construction have been reduced by 2000. This includes district offices also. The annual saving in salaries effected amounts to \$3,000,000. The board has canceled a number of contracts and is now decreasing commitments in every direction. The workmen employed in the various shipyards numbered 280,000 on June 30. This number has been reduced to 250,000, a figure which may not be cut further for the time being. Present intentions of the board are to bring the construction program to an end by the fall of 1920. About 3,000,000 deadweight tons of ships remain to be delivered.

Recent launching at the Quincy, Mass., plants of the Bethlehem Shipbuilding Corp., include the shipping board steamer TRIMOUNTAIN, christened by Miss Mary D. Haliowell, and the destroyer BILLINGSLEY, christened by Miss Irene B. Billingsley. The latter vessel is the thirty-third vessel of its kind to be launched at the Fore River plant. The destroyer AUSBURN, the thirty-fourth vessel of this type has since taken the water. Forty vessels altogether have been launched at the Fore River plant during the year 1919.

Only New Vessel of Her Type

Four-Mast Barkentine Built in Maine Is Representative of Woodworkers' Art — Designed For Speedy Sailings

WHEN the 4-mast wooden barkentine REINE MARIE STEWART cleared from Thomaston, Me., in ballast, bound for Norfolk, Va., late in December, she carried with her the unique distinction of being the sole vessel of her type to be built in 1919. She is a product of the Lunn & Elliot Co., Thomaston, Me., and is the fifty-fourth vessel to be launched by that firm. In common with other vessels built by this company, the STEWART is a fitting example of the wooden ship-builder's art as practiced for generations on the rockbound coast of Maine.

The STEWART has a carrying capacity of 2000 tons. Her lines follow closely those of the barkentine CECIL P. STEWART another barkentine built by the Dunn & Elliot Co. As the CECIL P. STEWART has proved to be a speedy vessel, it is believed that the REINE MARIE STEWART will prove economical in operation. She will be used in the transatlantic and South American trade.

The STEWART'S frame is oak from the forests of Maine. The plank-ing and ceiling are Oregon pine. The former measures 5 inches in thickness and the latter 12 inches. The main keelson is built up of five tiers of 14x14-inch timbers while there are three tiers of sister keelsons of the same material. The after house is 34 feet long and is finished in cypress. The forward house is 33 feet long, finished in North Carolina pine. The lower masts are Oregon pine, each 100 feet long with the exception of the foremast which is 72 feet. The foremast carries a topmast and top-gallant mast, each 44 feet long. The foremast is 29 inches diameter at the butt. The foreyard is 76 feet long. The other topmasts are each 52 feet long. The spanker boom is 66 feet long, while the other booms measure

44 feet. The gaffs are 45 feet long. The main rigging is 4-inch wire rope. Her principal dimensions and official custom house figures are.

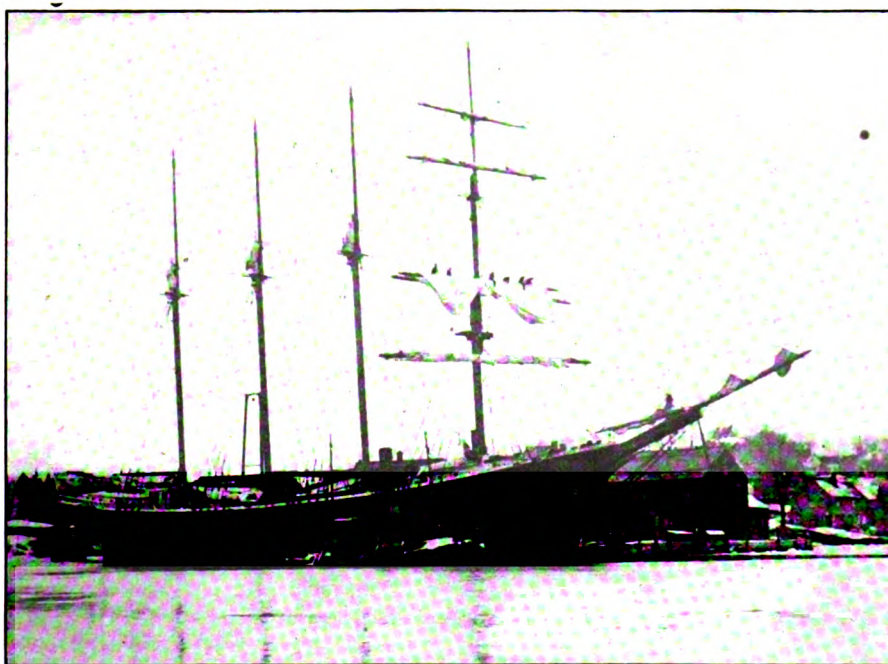
Length, feet	218
Beam, feet	41.4
Depth, feet	19.4
Tonnage, gross	1307
Tonnage, net	1186
Carrying capacity, tons.....	2000

The equipment of the vessel is complete in all respects. The after house is heated by a hot water. She carries two Baldt stockless anchors weighing 5300 pounds each and 210 fathoms of 2-inch chain cable. Her windlass and cargo winches were made by the Hyde Windlass Co., Bath, Me. Two boats are carried. One is a power boat, 22 feet long, fitted with a 7½ horsepower Hartford engine while the other is a 16-foot yawl. Both boats were built by the ship's builders. Composition and iron castings and blocks were furnished by Knowlton Bros., Camden, Me., while

vessels at a time when ships of this type are not generally favored is due, they point out, to the fact that the men in charge of the work are masters of their various trades. The vessel's timbers were felled and hewn by George L. Wentworth, her master builder was John E. Shrader, her blacksmith work was done under the supervision of Oliver D. Mathews, Isaac N. Young was the master joiner, A. D. Chadwick looked after the painting, J. D. McQuarrie did the caulking, Oliver Johnson looked after the fastening, the rigging was set up by George McCarter, Philip Thibedeau had charge of the planking and John Moulaison did the dubbing.

The result of the combined efforts of these men is a vessel of which the yard is proud and one that, it is predicted, will show her cabin lights to any vessel of like tonnage she happens to encounter sailing on the same tack during the long watches at sea when the

lee scuppers are awash and the taut weather rigging sings a weird tune while the sails strain at their bolt ropes. The barkentine rig was introduced over 50 years ago, originating on this side of the water. In reality it offers a compromise between a square-rigged ship and a schooner. A square-rigged ship's ability to make time with the wind abaft her beam is a matter of nautical history while the schooner rig possesses a distinct advantage in two



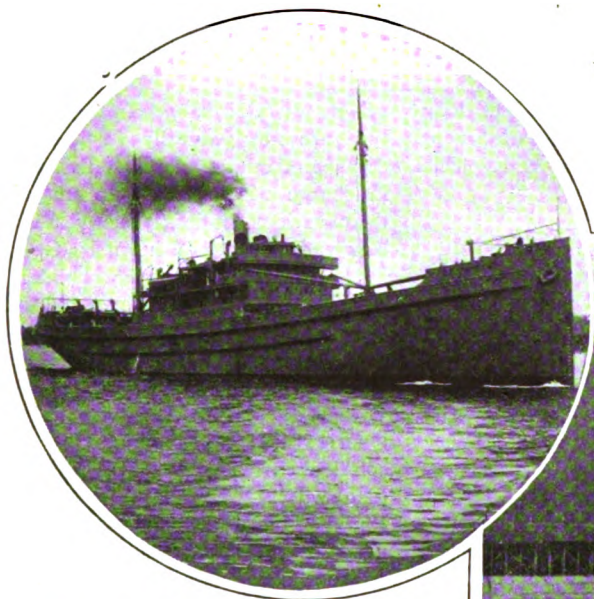
REINE MARIE STEWART, 4-MAST WOODEN BARKENTINE, RECENTLY BUILT FOR THE TRANSATLANTIC AND SOUTH AMERICAN TRADE

the running rigging and other cordage was supplied by Baker, Carver & Morrell, New York.

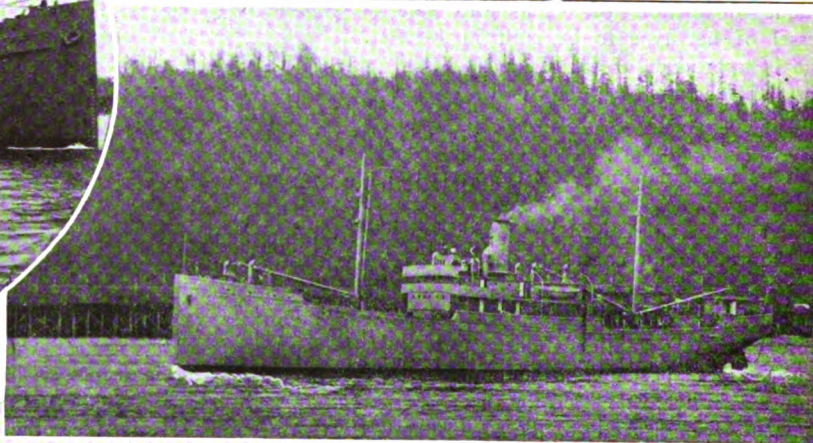
The vessel is commanded by Capt. H. L. Heyliger, Brooklyn, who recently sold his master's interest in the schooner MARGARET THROOP to Capt. W. A. Simmonds, Brooklyn. The Lunn & Elliot Co.'s ability to build satisfactory wooden

ways: It permits a vessel to be handled with a small crew and, again, a fore-and-aft rigged craft can point closer than a square rigger when sailing to windward. By combining the advantages of the two rigs, the product is a vessel with much of the running capacity of a square-rigged ship combined with a schooner's ability to sail close hauled.

New Stars in Our Banner of the Seas

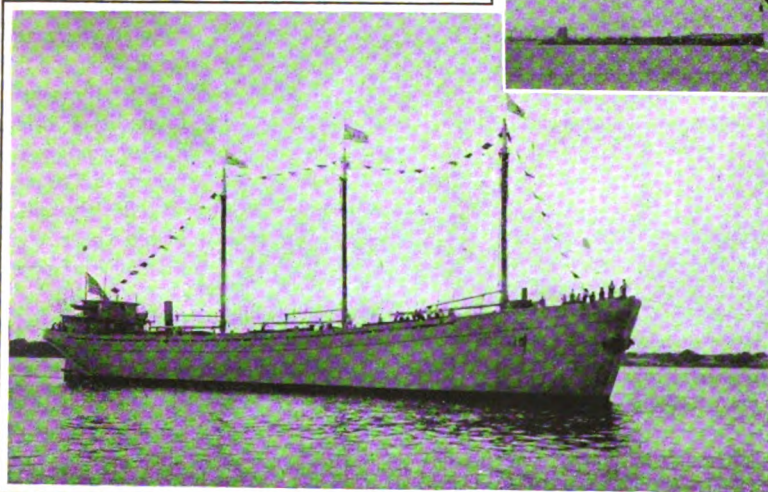
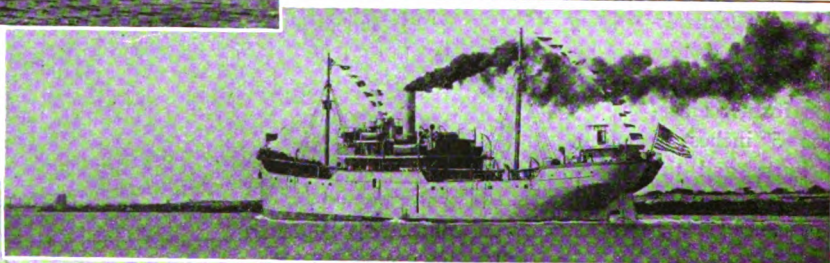


Two of the sturdy ships built on the Pacific coast. The Grays Harbor type, built by the Grays Harbor Motorship Corp., Aberdeen, Wash., has a deadweight tonnage of 4000, the same tonnage as that of the Cresap, the Peninsula type of boat shown below, built by the Peninsula Shipbuilding Co., Portland, Oreg.



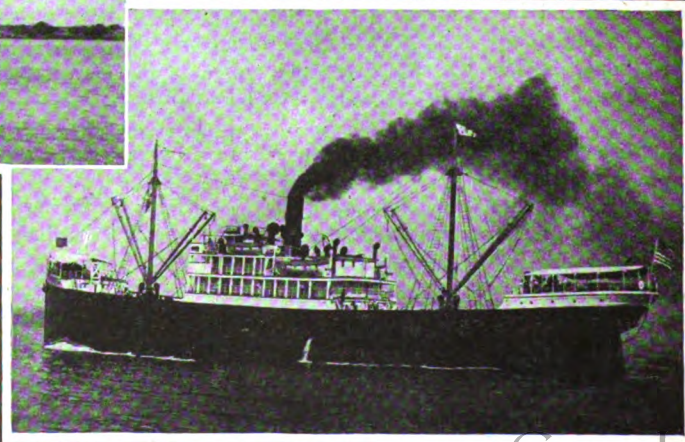
Houma, 10,100-ton tanker built by the Bethlehem Shipbuilding Corp., Sparrows Point, Md.

Agria, a Ferris-type of boat of 3580 deadweight tons, shown below, was built by the Tampa Dock Co., Tampa, Fla.



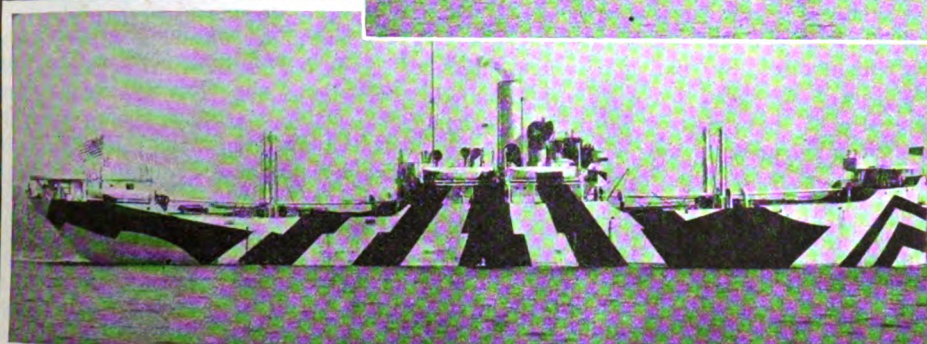
Pacific American Fisheries type, 3500 deadweight tons, built by the corporation of that name at Bellingham, Wash.

Another contribution from Florida to the new merchant fleet was the Anastasia, a barge of 2500 deadweight tons, the product of the St. Johns River Shipyard Co., Jacksonville, Fla.



Ships Built for Emergency Fleet Corp.

Steel cargo vessel, Lieutenant De Missiessy, designed and built by the Skinner & Eddy Corp., Seattle.

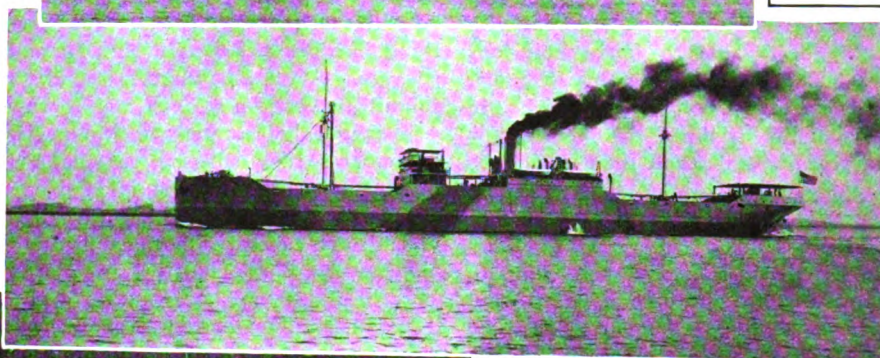


Polar Land, a refrigerator type of 6200 deadweight tons, was built for wartime purposes by the Baltimore Dry Docks & Ship Building Co., Baltimore

At the right is Red Cloud, a McClelland type of 3500 deadweight tons, the product of the Merrill-Stevens yards, Jacksonville, Fla.



Liberty Glo, built at Hog Island by the American International and recently damaged by a floating mine



Calala, one of the Ballin type of ships, of 4500 deadweight tons, built at the yards of the Supple-Ballin Shipbuilding Corp., Portland, Oreg.

Below is the Auburn, a representative of the 8800 deadweight-ton cargo type, built by the Chester Shipbuilding Co., Chester, Pa.



Sees Danger of Federal Control

Lord Inchcape, Head of Large British Steamship Line, Warns of Nationalization Movement—Analyzes England's Ship Future

ANALYSIS of factors which will govern the future of the British merchant marine was set forth by the Right Hon. Lord Inchcape at the seventy-ninth ordinary general meeting of the Peninsular & Oriental Steam Navigation Co. held in London, Dec. 10. Lord Inchcape is one of England's leading authorities on shipping. In addressing the meeting, Lord Inchcape said in part:

"The P. & O. company now controls 427 steamers with a gross tonnage exceeding 2,250,000. The ships are operating all over the world. Our wings are well spread. The personnel of the management of the various companies which have joined us has been practically undisturbed, we are all working in unison, doing our best to retain the good will of our different constituents, and by co-ordination we are endeavoring to keep down our working costs. So far as we can see, unless some general cataclysm overtakes shipping, we ought to be able to fairly hold our own. The P. & O., the British India, and the other companies which are associated with the P. & O. have for many years husbanded their resources. Shipping is one of the most uncertain industries in the world. One or two good years are as a rule followed by five or six bad, and if the shipping companies or the shipowners had been shortsighted enough to distribute the profits of the good years up to the hilt and to make no provision for the bad, the mercantile marine of the United Kingdom would have been nowhere when the war broke out five years ago.

FROM September, 1914, to March, 1917, half the British mercantile marine was under charter to government at blue book rates, which left a comparatively meager profit. From March, 1917, practically all steamers not previously engaged by government came under charter at blue book rates, the owners working them, but the earnings were for account of the government. It has been a gigantic undertaking and the accounting work has been extremely heavy. It was a war measure; we all threw our hearts into it, but it could not possibly have gone on indefinitely. The accounts as between shipowners and the govern-

ment are not yet entirely settled, but they are gradually being worked off, and should be finally squared within the next few months.

It is a curious coincidence that as soon as all the free ships came under charter to the government and the rates of freight and passage money were controlled by the government, they were advanced by anything from 19 to 85 per cent, and it is another coincidence that as soon as the steamers were freed from control in the spring of 1919, the rates were considerably reduced. If there was any profiteering in freights and rates of passage, the shipowners were certainly not the culprits.

IT WILL, in my judgment, be many a long day before rates of freight and passage come down to a prewar basis. The cost of working steamers has increased enormously. Wages, coal, stores, repairs, cost of handling cargo, have all advanced, and it will be impossible to make ends meet at anything like prewar rates of freight and passage. After all, we are bound to submit to economic laws, and if vessels cannot be run to earn their disbursements they will have to be laid up. It may interest you if I give a few figures showing the advances which have taken place since 1913:

Advances in 1919
over 1913
per cent

Wages	130
Labor	115 to 150
Handling cargo	150 to 200
Oilman's stores	360
Engine room oil.....	174
Ropes	220
Canvas	408
Cost of repairs.....	339
Paints	217
Dock dues in London..	80
Beef	158
Mutton	128
Wine	55 to 162
Whisky	150
Suez canal dues.....	36
Glass	338
Crockery ware	112
Linen	296

"In addition to all this, there is the greatly enhanced cost of new tonnage. A steamer cannot be built at the present moment for less than two or three times what she would have cost before the war, and there is insurance and depreciation and interest to be provided for on the increased value. The outlook is not

clear, and it is impossible to read the future with any degree of accuracy. As I have said, however, I think the P. & O. company is as well placed as any other shipping company in this country to face the future.

"As to its position in relation to foreign competitors, I am not so sure. Some of our foreign competitors have made enormous profits throughout the war, their ships for the most part have been free from requisition, they have not been subjected to war taxation or excess profits duty to anything like the extent to which we have been—they have not been in the fight. One company, after making full appropriations, has distributed in cash to its shareholders no less than 100 per cent in dividend. We make no complaint, we have borne philosophically our share of the burden of the war, and we are proud to think that the prime minister has said that without the British mercantile marine we should have collapsed, as a nation, by February, 1915.

THE P. & O. company and its allies lost during the war by enemy action no fewer than 94 ships of a gross tonnage of 543,530. By building and purchasing, including ships on the stocks, they have replaced these, as well as losses by marine risks and old ships sold, with 169 ships of a gross tonnage of 1,168,298. The two fine mail steamers NALDERA and NARKUNDA, which were contracted for before the war, were held up by government requirements. The NALDERA will be delivered next month, and the NARKUNDA a few weeks later. They will go on the mail service to India and Australia. Two other large mail steamers are under construction, and two others have been ordered. The large mail steamers of the MOREA class which were not sunk by the enemy, and which were fitted as armed cruisers, have to some extent been reconditioned and will shortly be in commission again, and we hope to see all our trades back to normal and the mail services to the East, the Far East, and Australia restored to their old regularity within a short time.

"In the early part of 1919 I did a daring thing and with considerable trepidation. I entered into a contract with government entirely on my own

account to take over some 77 steamers then under construction, and these were distributed among British shipowners on the same terms as I took them over. When that transaction was completed I entered into another contract to take over an additional 79 steamers, which were building, and these were similarly disposed of. In July I made a third contract to purchase 40 steamers then in commission, and these have also been distributed to British shipowners.

OFFERING these vessels to shipowners I stated that I did not intend to make a profit for myself or the companies with which I am associated. The arrangement was made in the interest not of the British mercantile marine alone, but of the whole mercantile community, so that the government might be freed of shipping business, and in order that normal conditions of trade might be restored as speedily as possible. The tonnage amounted to 1,400,609 deadweight, involving about 33 millions sterling (\$160,000,000) and I am happy to say the transactions have been concluded without loss, and though the operations were not free from anxiety at times, everything has gone through in the most agreeable way both with the ministry of shipping and the shipowners. The P. & O., the British India, and the other companies with which we are associated received their fair share of the ships, but no more, and though the prices are high, employment is readily available, and the vessels we have acquired will assist us materially in maintaining our trades. Without them we should have been seriously handicapped in keeping up our cargo services owing to the losses sustained by enemy action. I felt, as I am sure you all feel, that it would have spelled disaster all round if the government had been obliged to run these ships on its own account, and that it was worth some trouble and risk to prevent this.

"A year or two ago, when there was a talk of nationalizing the British mercantile marine, I said at our annual meeting that if this were done it would involve our retiring from business and selling our ships to neutrals, allies, and others. It was facetiously suggested that by 'others' I meant Germans. Of course this was ridiculous. By 'others' I meant Americans, and if British shipowners are to be up against the competition of the United States shipping board, which means the resources of the American government, we may yet

be forced into that position. Recently I had the privilege of listening to one of the most eloquent speeches I have ever heard—a speech by the American ambassador, Mr. Davis. He said he hoped that the present cordial relations between Great Britain and the United States would continue for ever. If the United States government will only turn the ships in which the United States shipping board is interested over to private owners and leave the owners to compete with private enterprise in this



RIGHT HON. LORD INCHCAPE

country, I am not afraid, but if the government on the other side of the Atlantic is out to tax the people to build up a mercantile marine at all costs, the outlook for the shipping industry of these islands is anything but rosy. I am hopeful, however, that the government of the United States will leave the shipping industry of the world, including their own, to look after itself.

"Another competitor to private enterprise, in the commonwealth government of Australia, has come on the scene. Having bought a few old ships at the outbreak of hostilities, and having made large profits out of run-

ning these ships throughout the war, being free from requisition, excess profit duty, and every other form of taxation, the commonwealth government is now bitten with the idea of becoming a shipowner, and has come out to compete with private enterprise. If British shipowners have against them the resources of Australia it may end in their selling their ships to the Australian government. The shipping companies serving Australia, the Commonwealth & Dominion line, the Aberdeen line, the White Star, the Federal, the Holt line, the Orient company and the P. & O., the British India, and others, have built up a fine service of steamers. They have maintained the most friendly relations with shippers. Everything has worked perfectly smoothly for the last 40 years. We regard it as uncommonly hard that the commonwealth government should now propose to step in and, with the resources of Australia behind them, borrow money to place steamers in the Australian trade to compete with private enterprise.

I HAVE read the draft of the anti-dumping bill carefully and with growing consternation. If what we want is a short legislative cut to commercial suicide, then no more effective bill was ever devised. Or, again, if what we want is an object lesson in the chaos in which it would involve the international trade of this country, then I agree that the measure is an excellent one. Otherwise it has no virtues whatever. The government when it saw its handiwork in print, and began to hear what business men thought about it, apparently realized that it would not do. At any rate, they have postponed its consideration for a month or two, never, I sincerely trust, to resume it. Let me say at once that any measure on these lines, any measure which seeks to rivet on British industry the abomination of government control, with its paraphernalia of licenses, certificates, affidavits, appeals, and so on, will be fought unitedly by the entire commercial community. We have had enough of this sort of thing. We endured it while the war lasted because patriotism demanded that we should. But the sole condition on which British trade can recover the ground it has been forced to yield is that it should be absolutely free of bureaucratic control. We want to get on with our business, not to spend our time arguing with government clerks, dancing attendance at the board of trade, appearing before

committees, filling up forms, wheeling consuls for permission to import what we need, throwing open our books and bills and invoices to inspectors from Whitehall, and going through all the worry, expense and delay of explaining and justifying every transaction in which we are engaged to some official inquisitor. I observe the title of this fantastic measure is trade regulation bill. This is quite a misnomer. The name of the instrument should be, not trade regulation, but trade extermination bill.

"It has been a hard fight against bureaucratic control, which has got hold of us during the war. The end is not yet. But the victory will be ours, if only both employers and employes stand firm. The welfare of the employe just as much as that of the employer depends on freedom from officialdom. Upon my word, I believe that people who think that this extraordinary bill is the way to resuscitate British trade have taken leave of their business senses; and the policy adopted in regard to the coal industry confirms my fears.

"The difference between government management of business affairs and private management is that, in business, decisions have to be taken, and are taken, promptly. A man in business can decide quickly and can take responsibility and risk. In a government department the officials strive to avoid responsibility. They are timid. They have in front of them questions in parliament and the public accounts committee, and all proposals have to go through many hands and many departments before they can be dealt with.

DURING the year we had an opportunity to acquire an interest of something over one-half of the Orient company's shares. With this company we have worked in friendly accord for many years. As in the case of the other companies which have become associated with us, the Orient company will continue to be worked as formerly, as a separate organization, but the linking up and the co-ordinating of arrangements for repairs and other matters should prove of mutual advantage.

"After a visit which I paid to the eastern Mediterranean in the spring of this year, we acquired the bulk of the shares of the Khedivial Mail Steamship Co. We anticipate that a valuable traffic both in passengers and cargo will be developed in the eastern Mediterranean when things are settled in that part of the world, and, in addition, transshipment facilities to

and from the P. & O. and British India steamers will be given at Port Said for passengers and cargo to and from India and the Far East and this country.

"We have decided to go over gradually from coal to oil in the matter of fuel. This has come through our being satisfied that it will be possible in the near future to secure adequate supplies of oil all over the world. The difficulty of driving large ships at a high speed by internal combustion engines has yet to be surmounted, but that may come in time. For the present we can raise our steam for the reciprocating and turbine engine by oil fuel at a cost no greater than coal, and with a very much less waste of human tissue.

WE HAVE been carrying the marine risk to a great extent on the fleets of our allied companies for some years. The premiums received were held in suspense till we saw where we were, but as they now amount to a large sum, after paying claims, we have brought them into our balance sheet under the head of insurance account, and have added to them from certain provisions which had been made in the past, all of which will not now be required. The fund stood Sept. 30 at £2,000,000, but this is none too large considering the liability at stake.

"We have already paid for the new tonnage which has been delivered, we have made a substantial payment to account of the ships building, and we see our way to pay for the balance. We hope to win through without having to mortgage our assets, but you will realize that it is only prudent that we should ask our stockholders to forego their usual bonus at this juncture, when we shall want all our resources to meet prospective liabilities. Our new ships are costing fabulous sums and will require to be drastically written down as they come into the water, but, fortunately, the ships that remained to us after the war had been well depreciated, and this will assist us in keeping the book value of the fleet on the average at a fairly moderate figure.

"About 8,000,000 tons of British shipping were sunk by enemy action out of the prewar total of 21,000,000 tons. But this has not affected the determination of British shipowners to maintain their position, nor has it broken the seagoing spirit of the race. Given fair play and freedom from government interference and control, the British mercantile marine will eventually come out at the top again.

To sum up our stewardship for the year we have with our associated companies, including the steamers under construction, added 104 steamers of a gross tonnage of 778,284 to our united fleets. We have carried out the obligations under our mail contract to the best of our ability in the circumstances of all our large mail steamers being used for the purpose of the war, and the postoffice has more than once expressed its appreciation of our efforts. For five years before the war the company had 260 mail sailings from London to Bombay and the same number from Bombay to London. During the five years ended July 31, 1919, the company had 211 mail sailings to Bombay and 220 from Bombay to London. We never throughout the whole period of the war sent an Indian mail either outward or homeward round the Cape. When it is remembered that enemy submarines were particularly active in the channel and Mediterranean, this is not a bad record, and it speaks volumes for the navy as well as for those in charge of our ships.

"If you pass our accounts we shall pay a dividend of 12 per cent on our deferred stock, after meeting our other obligations, and we shall add £2,000,000 to our deferred stock by distributing this among our deferred stockholders.

WE HAVE acquired and paid for a large interest in the Orient company and in the Khedivial Mail Co. We have earned enough to provide for depreciation on our fleet, our properties and our investments. We have added something to our contingency and reserve fund. In addition to giving pensions, we have made liberal grants to those of our captains and others, who, by reason of strain during the last five years, felt it necessary to give up the sea before their time for retirement had arrived.

"The annual profits on our operations have been in excess of our prewar datum line for the last few years, but the bulk of this has been paid over to the government. We have not been profiteers. We have made no fortune out of the war. We have lost many of our best ships by enemy action, and the insurance money we got for them will not replace one half of them. I am safe in saying that the P. & O. company and its associates would have been infinitely better off today, in view of all that has happened, and in view of what they will have to face for many years to come, had there been no war."

Launching In Restricted Waters

Problem of Checking a Ship After Launching Was Investigated with Models—Data Proves Valuable in Actual Practice

BY CAPT. H. M. GLEASON, U. S. N. AND LIEUT. COMMANDER H. E. SAUNDERS, U. S. N.

ALTHOUGH 10 papers have been read before this society, giving notes and data on launching various types of ships, the subject of launching ships in restricted waters has not been touched upon. The authors, therefore, have undertaken to present this subject based upon the experience of the Mare Island navy yard. Unfortunately, but little definite information is obtainable from text-books, technical papers, etc., giving the results of actual launchings in which means to check the speed of ships have been used. It is therefore believed that the subject matter of this paper will be a welcome addition to the already published data on the launching of vessels under various conditions.

The launching of a large ship is attended with a certain amount of risk under the most favorable conditions, and when there is added to this the problem of checking the ship after leaving the ways, the anxiety of those responsible is not relieved until the ship comes to rest. In most shipyards in this country, there is sufficient water space in wake of the building slips to allow the ship free scope, or at least sufficient water space to check the ship by dropping anchors. In some shipyards situated on narrow waters the building slips are inclined at an angle of about 45 degrees to give greater travel. In many instances, vessels are sent into the water sidewise. This practice is universal on the Great Lakes.

Various methods have been successfully used to check vessels on leaving the ways, such as breaking rope stops, use of wood friction wedges, fitting a mask on the stern, dropping anchors, slewing the stern with the channel by dropping stern anchors, and the use of chain drags. Anchors are generally fitted for emergency use in connection with any of the above methods.

The most commonly used method, especially in English and Scotch shipyards, is to employ heavy chain drags. The amount of chain used varies according to the experience at the various yards and depends upon the nature of the surface available for the drags, launching speed, etc.; but the usual weight of chain is about one-twentieth

of the launching weight to bring the vessel to rest in from 200 to 300 feet after leaving the ways.

The large building slip at the Mare Island navy yard, is set nearly at right angles to the channel, which is 1230 feet wide. It is therefore necessary to check any large vessel by other means than anchors, as the space available is not sufficient for direct checking or for slewing the stern. The PROMETHEUS, a fleet collier, was launched in 1908, using chain drags to stop her. Although the drags successfully stopped the vessel within 200 feet, the work

of the launching weight to bring the ship. The disposition of drags, wire ropes, and pads was as follows:

Destination of Drags	Weight (tons)	Port	Starboard	Distance of stem beyond end of ways when drag takes up	Remarks
1-A	10	10		37	Attached to pad at frame 45
1-B	15	15		50	Attached to drag 1-A
1-C	25	25		60	Attached to drag 1-B
2-A	25	25		84	Attached to pad at frame 35
2-B	25	25		92	Attached to drag 2-A
3-A	45	45		124	Attached to pad at frame 25
3-B	50	50		307	Attached to drag 3-A
	195	195		Total.	
				390 tons.	

As a further precaution, two 3000-pound anchors, one port and one starboard, were secured on the side of the ship at frame 136, each with 10-inch hawser stopped up at intervals and carried through stern chocks. One of these anchors was to be dropped on a signal given from the bridge should the drags fail to act. These anchors were intended to turn the stern up or down stream as seemed most expedient. The actual results of the action of the chain drags were as follows:

Velocity of ship at time of pivoting (also maximum), feet per second.	16.2
Velocity of ship when fully afloat, feet per second.	15
Drags 1-A—port and starboard moved, feet.	213
Drags 1-B—port and starboard moved, feet.	200
Drags 1-C—port and starboard moved, feet.	190
Drags 2-A—port and starboard moved, feet.	166
Drags 2-B—port and starboard moved, feet.	158
Drags 3-A—port and starboard moved, feet.	126
Drags 3-B—were not moved.	

The total weight of chain drags actually coming into play was therefore 290 tons or ————— launching weight

18

Early in 1913, in preparing for the launching of the next ship, the fleet oiler KANAWHA, the development of friction brakes was actively taken up and experiments conducted which gave assurance of the practicability of friction brakes, using wire ropes passing through steel blocks under pressure. In the future design and development of these brakes advantage was taken of the data on this subject presented by A. Hiley, associate member of the Institute of Naval Architects, in a paper prepared by him in 1913.

The launching weight of the KANAWHA

The 1919 Index

THE complete index of THE MARINE REVIEW for the calendar year 1919 is now available for distribution to subscribers. The progress made during 1919 in marine practice, in both a technical and commercial sense, makes the index for the past year of more than ordinary value. Subscribers desiring to secure a copy may do so without charge by writing direct to the circulation department of THE MARINE REVIEW, Cleveland.

necessary to pile the chain, to completely clear the slip of obstructions, blocking, shoring, etc., and finally to untangle the masses of chain, was extensive and costly. The next vessel, launched August, 1912, was the fleet collier JUPITER, of 19,000 tons loaded displacement and 5207 tons launching weight. The problem of stopping this vessel was gone into carefully, and the final conclusion was to use chain drags. Friction brakes were considered, but the development of the idea at that time was not sufficient to warrant the trial. A description of the chain drags as used in launching the JUPITER will be of interest. In all 390 tons of chain were used, coiled in 14 coils ranging from 10 to 50 tons each, the smaller coils or drags being arranged to take up first in succession to minimize the danger of parting the cables due to a too sudden stress. Seven piles of chain were placed on each side, connected up as shown below to three 2-inch (diameter) wire ropes attached to pads on

Abstracted from a paper read at the twenty-seventh general meeting of the Society of Naval Architects and Marine Engineers, held in New York, Nov. 13 and 14.

was estimated at 4000 tons. Actually it was 4100 tons, and it was therefore estimated, from friction data obtained in experiments, that two launching brakes would be sufficient. A description of the launching brakes used and other precautions taken to check the ship follows:

The brakes were securely anchored on each side of the slip, 22 feet from the center and about 80 feet aft from the bow. In each brake the friction length employed was two 2-inch diameter steel wire ropes, six strands of 37 wires each, 600 feet long wound on reels fitted with brakes placed about 50 feet from the brake. Springs tightened by screws produced the requisite pressure upon the ropes, which are gripped between grooves in the upper and lower steel castings. In order that the pressure applied by the tightening screws might bear equally on the two ropes, the upper casting is formed with a ridge at the center to which the pressure is transmitted by beams formed of channel sections and plate. To regulate the pressure on the rope at will, three hand winches were provided and bull wheels fastened to the nuts over the spring washers. These were connected by a $\frac{3}{8}$ -inch diameter endless wire rope. The two friction cables were connected by a heart shackle to a single 2-inch diameter wire steel hawser, 560 feet long, which was shackled to a pad on the ship's side at frame 46 and on line with the second stringer, the same arrangement being used on both sides of the vessel. To assist in stopping the vessel, a mask was also fitted on the stern, 16 feet wide x 11 feet high, the lower edge being 8 feet above the keel line. As a further precaution, a 11,000-pound anchor was secured on the port side of the ship at frame 112, with a 10-inch hawser stopped up at intervals and carried to the stern bitts. This anchor was to be dropped upon signal given from the forecabin should the brakes fail to act, and was intended to turn the stern down stream. A 6000-pound anchor was housed in the port hawser pipe and was to be dropped if it became necessary to hold the bow.

THE results of the launching, as far as they concern the launching brake, were as follows:

Launching weight, tons.....	4100
Maximum velocity, feet per second.	16
Velocity when ship floats, feet per second	13
Total distance friction ropes were drawn through brakes before ship was stopped, feet.....	341

The same brakes and arrangements were used in launching the MAUMEE, a sister ship to the KANAWHA. The re-

sults in the case of the MAUMEE were as follows:

Launching weight, tons.....	4370
Maximum velocity, feet per second.	17.25
Velocity when ship floats, feet per second	14
Distance cables were drawn through brakes before ship stopped, feet.	329

The same brakes, but without the stern mask, were used in launching the CUYAMA, a sister ship to the KANAWHA and MAUMEE. The results in the case of the CUYAMA were as follows:

Launching weight, tons.....	4056
Maximum velocity, feet per second.	16.7
Velocity when ship floats, feet per second	14.5
Distance cables were drawn through brakes before ship stopped, feet.	444

By comparing the foregoing data, the effect of the stern mask may be estimated as the CUYAMA, without the mask and with a slightly greater velocity, when afloat, traveled 125 feet farther than the MAUMEE.

THE action of the wire rope cables under pressure between the upper and lower cast steel brake blocks bears an important part in the successful operation of this type of brake. There were no reliable data on the coefficient of friction under the actual working condition, and no guide as to what type of wire rope was best suited to obtain the desired frictional resistance. These two questions were solved by numerous experiments, and actual trials on vessels launched.

As to the coefficient of friction, the figure given by Mr. Hiley is 0.08. All available information in handbooks and experiments on a small scale indicated, however, that the coefficient of friction was much higher than this, presumably about 0.2. To check this figure and to test the apparatus, the hydraulic brake developed for the CALIFORNIA was mounted on a temporary stand and run with full pressure, using one friction wire in one of the grooves. The coefficient of friction deduced from these experiments is about 0.24, and the results obtained indicate that this value remains practically constant for all loads and all speeds of the wire rope.

As to the type of wire rope to be used, it was obvious that the wire strands on the outside of the rope would have to lie exactly parallel to the axis of the rope in order to prevent "rifling." It was evident, after the first experiments, that the wire would score the grooves in the cast steel blocks, but so long as the scores remained parallel to the blocks, the action of the frictional pull on the wire ropes was entirely satisfactory, causing no unlaying or tightening up of the strands. There was some question as to whether a solid

rope was necessary or whether a rope with hemp core would not be more suitable. The latter rope, being more elastic, is less likely to seize in the grooves, and for this reason has been used in all the launching operations with this brake. There had also to be considered the possibility of one or more strands breaking inside the brake and causing a jam. In this event the wire rope would likely be broken or the chain pendant to the ship carried away. During the several launchings, the outside wires in the strands have been perceptibly flattened by abrasion, but in no case has any strand parted or any wire rope jammed. In this connection it is interesting to note that the same wire ropes were used as friction ropes in the launching of three large ships, and now are in condition for use with at least as many more. From the experience gained at the Mare Island yard the most satisfactory type of wire rope is 2-inch diameter, black, plow steel, six strand, 37 wires each, one hemp center, ordinary lay and 137 tons breaking strength. Particular care was required under the specifications for the rope to have the individual wires in each strand laid parallel to the axis of the rope at the point of frictional contact.

In connection with the launching of the battleship CALIFORNIA, the number of brakes necessary was determined from the data and experience in the use of the brakes used in launching the KANAWHA, MAUMEE and CUYAMA. In these latter cases, two brakes were used with satisfactory results. Therefore, by comparison of the relative launching weights and velocities, the number of brakes required for the CALIFORNIA was 10.

It was also considered necessary to have more definite control over the pressure to be applied to the friction blocks, and the screw, nut and bull wheel scheme was abandoned for hydraulic cylinders and pistons. The experiments conducted showed that two pressure cylinders were sufficient in place of three.

Although previous experience with these brakes was sufficient to determine the number to be required in launching the CALIFORNIA, the exact pull required from the brakes, collectively and individually, and the actual force required to stop the ship were not definitely known. There were also other questions on which more complete information than was available was considered necessary, such as the actual pivoting point at various tides, the depth of water required to accommodate the deepest dip of the stern, the behavior and clearance of the forefoot on leav-

ing the end of the ways, etc. It was therefore decided to construct and try out a launching model based on the law of comparison similar to model tank experiments. This model could therefore be launched at will and as often as required, varying the conditions to suit those expected at the time of the launching.

The model was constructed with a length ratio of 1:96 (scale $\frac{1}{8}$ -inch equals 1 foot), as giving a craft which was easy to handle, yet sufficiently large to make possible a fair degree of accuracy in the results. Briefly, the dimensions of the model are as follows:

Length, feet $6\frac{1}{4}$
 Beam, inches 12
 Weight (approximate) pounds..... 39
 Material—Wood, hollow, finished in spar varnish.

Displacement, longitudinal position of center of gravity and longitudinal moment of inertia may be varied at will.

The tank and the framework supporting the model require no special comment. Fresh water was used, and the contour of the river bed was represented by a layer of gravel and sand on the bottom of the tank. The water area represented the width of the channel, 1230 feet, by a certain portion of its length, 320 feet. A modified form of hook gage recorded the tide level in feet and tenths. The ground ways (with camber), the ship, the cofferdam bulkheads, crane piers, etc., were all reproduced exactly to scale.

TO OBTAIN correct results by the method of comparison, it is necessary for the model to run off the ways and through the water at its "corresponding speed." By running on a system of rails and steel wheels with hardened pivots it was possible for the model to accelerate itself at the required rate without the application of any external force. A central rail under the keel of the model ran on two large flanged wheels, one under the vessel and one at the end of the ways; two wheels at the fore poppets run on two rails which represent the ribbands of the ground ways. This system of mounting the model on three points was suggested by Percy A. Hillhouse and William H. Riddlesworth in a paper presented by them at the fifty-eighth session of the Institution of Naval Architects, March 29, 1915, as being decidedly preferable to mounting on six wheels, especially when the ways were cambered. The forward keel wheel of the CALIFORNIA model supports the weight until the keel track reaches the after keel wheel. The latter then supports the weight until the model pivots, when a special re-

leasing device drops it clear of the forefoot as the model leaves the ways.

The tumbling shores, cribs, wedges, cable reels and brakes were later added to the model, in order that launching drills might be held at the model, and the various gangs acquainted with their duties and the sequence of operations. A small brass preventer dog shore and a set of solenoid-operated mechanical triggers represented accurately the dog shores and hydraulic triggers on the ship. Two brass trimming masts, with pencils attached, erected at the forward and after perpendiculars, recorded the traces of the bow and the stern at all points of the launching operation.

ASPECIAL recording mechanism was designed and constructed to record simultaneously all data and to make the model as nearly as possible automatic in its operation. Without undue elaboration of details, the construction and operation of this mechanism may be described as follows:

A small cord (or cable, as it will hereafter be called) is fastened by a wire hook to an eyeplate in the bow of the model at the 16-foot water line. This cable is led forward over an aluminum idler pulley carried on a swinging frame and then back and around a small drum about $1\frac{1}{2}$ inches in diameter. Sufficient cable can be wound in a single layer on this drum to permit the model to run to the far end of the channel. The drum has two silver contacts on a small commutator and acts therefore as a chronograph, giving two marks per revolution on the recording paper. A standard navy mean-time break-circuit chronometer indicates seconds on the recording paper (by means of suitable solenoids and pencils) as a reference for the chronograph readings. The recording paper is drawn at constant speed over the paper table by two rubber rollers geared to a small direct current motor. A small controller with adjustable segments, also driven from this motor, controls the current to the solenoid triggers and to the tripping coils of the brakes. This controller switches on and off the motor and other solenoid circuits and renders the mechanism entirely automatic in its operations. As the entire launch consumes only seven or eight seconds, it is not practicable to arrange for manual operation in this connection.

The launching brake mechanism does not, of course, operate in exactly the same manner as the brakes on the full-sized vessel. The small drum upon which the cable is wound is constructed with heads of highly polished steel. Cork insert brakes, carried on swinging plates, bear against the heads of the

cable drum and serve to retard the angular motion of the latter when the brakes are applied.

The weight carriers and weights are released by solenoid operated triggers. Pistons on the weight carriers work in oil dashpots so as to prevent vibrations of the brake recording pencil, and pistons may be changed so as to give a sudden or gradual application of the brakes as desired.

The cable pull exerted on the model by the brakes is recorded as follows:

The aluminum idler pulley carries the bight of the cable which is attached to the model and being unwound from the drum. Any retardation of the drum, as the cable is being paid out, exerts at once a pull on the model, and the combined action of these two forces causes the swinging arm to move. The angular motion of the latter is, however, controlled by the action of two balanced springs at the lower end of the arm. Whatever movement takes place is proportional to the resistance of the brakes and is recorded on the paper by a pencil attached to the extreme upper end of the arm. This entire mechanism is accurately calibrated in such a manner that all errors due to angularity, inequalities in the springs, etc., are entirely eliminated.

A SHORT account of the sequence of operations during a launch may serve to explain more clearly the exact method of recording the desired information. Assume, first, that the model has been released and is moving down the ways, the cable is paying out freely as the only resistance is that of the small brush on the chronograph segments.

1.—At the designated moment, the controller operates the brake release and allows the weight carrier and weights to drop.

2.—The weight carrier, acting through the cords, causes the brakes to grip the revolving drum.

3.—The latter, although continuing to revolve and to act as a chronograph, is retarded somewhat by the action of the brake.

4.—A pull is exerted on the cable, which, leading around the idler pulley so as to effect a change of direction of 180 degrees, draws the latter toward the model against the action of the double springs.

5.—The pencil attached to the arm records the cable pull on the moving paper strip, while a stationary pencil traces at the same time a zero or reference line.

From what has been said in the preceding paragraphs, it will be evident that all elements of the launching con-

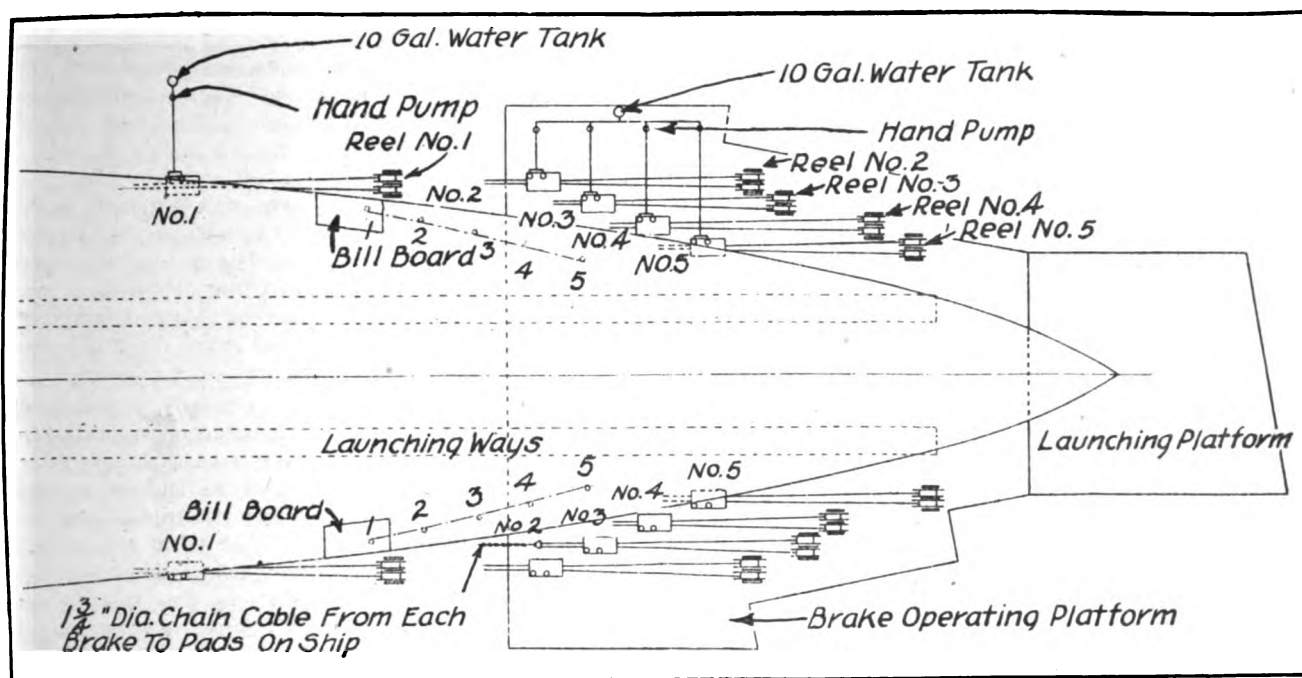


FIG. 4—PLAN VIEW SHOWING ARRANGEMENT OF LAUNCHING BRAKES USED IN LAUNCHING THE CALIFORNIA AT MARE ISLAND

ditions may be varied at will, using the apparatus to record all the data for successive series of runs. The various unknown factors are then determined as described below. With regard to the actual performance of the model, it may be said that all parts of the mechanism functioned in a most satisfactory manner and that the results for corresponding and similar runs were remarkably consistent.

To work up the results, it is of course necessary to apply the principles of mechanical similitude as is done for all work in the model basin. The length ratio, L being 96, the corresponding speed ratio is $\sqrt{L} = \sqrt{96} = 9.798$. Inasmuch as the maximum launching speed of the model is about 3 feet per second, corresponding to a ship speed of 29 feet per second, and as the vessel in any circumstances would never attain such a high velocity, means are adopted to reduce and regulate this velocity to

correspond with what may be reasonably expected on the day of the launch. A short length of cord is attached to the model and drawn through an improvised friction brake, the length of cord being varied to suit the final launching velocity required. As the effect of this retardation is only to reduce the initial velocity, and this action ceases long before the brakes are applied, it need not be considered except when determining the shape of the entire velocity curve. The final speed, when entering the water, may be varied in this way from 12 feet to 24 feet per second. The chronograph is so proportioned that each of the intervals between record marks represents about 19.2 feet travel of the vessel. For the sake of convenience, all units, unless otherwise noted, will hereafter be expressed in proper terms for the full-sized vessel. All calculations and curves have been worked up on this basis,

as the work is then more easily followed by all concerned.

The length ratio, L , as noted above, is 96. The displacement ratio is therefore $L^3 = 884,736$. For a weight of ship and cradle of 16,000 tons, this corresponds to a model weight of 40.52 pounds.

The ratio of cable pull on the model and brake pull on the ship is also L^2 , or 884,736. (From the theory of mechanical similitude, where $f \times s = \frac{1}{2} mv^2$.)

A pull of 500,000 pounds on the ship is equivalent to a pull on the model cable of 9.042 ounces, which, in turn, is represented by an ordinate of 0.81 inch on the recording paper. The model brake is capable of exerting a total relative pull of about 900,000 pounds, or some 400 tons.

The brake mechanism has been calibrated with extreme care, using a specially constructed and calibrated spring to exert a tension upon the cable in its normal direction, with the

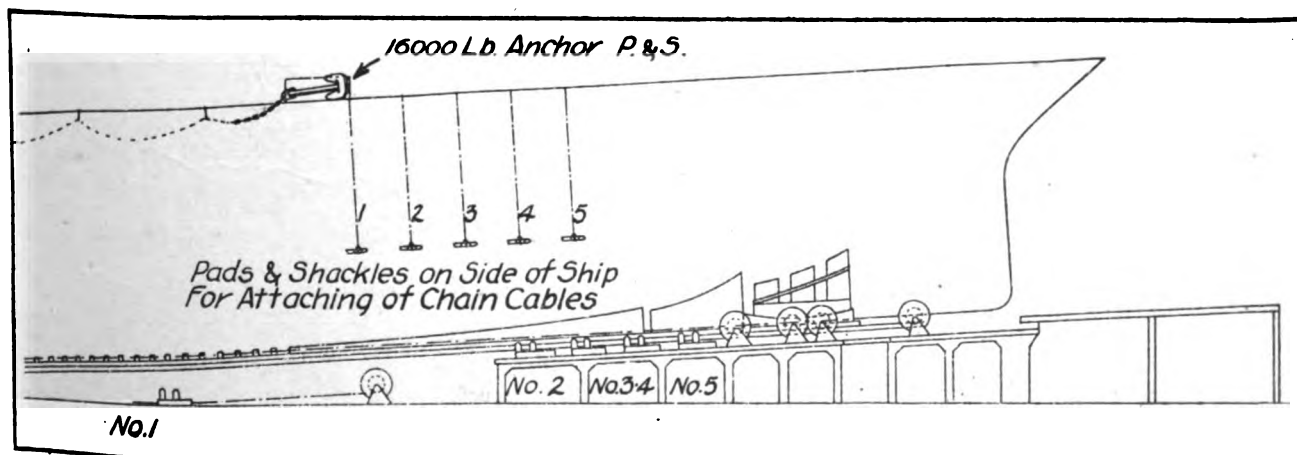


FIG. 5—SIDE ELEVATION OF DETAILS SHOWN IN FIG. 4

brakes set and the recording mechanism in operation. After repeated measurements of the resistance, due to the rotation of the drum, the rotation of the idler pulley and the friction of the pencils on the trimming masts, it has been assumed that this resistance may be neglected, as being within the limits of accuracy of the observations as a whole.

IN ORDER that the traces of the bow and stern may be correct in shape, it is necessary that the moment of inertia of the model about a transverse horizontal axis through its center of gravity should bear the proper relation to that of the large vessel; that is K , the radius of gyration, should vary as L . To this end, the model is suspended by two cords of known length equidistant from the center of gravity, and K determined in the usual manner. The inside lead ballast weights are then placed in such position as to fulfill the required conditions. It is understood, of course, that K for the large vessel must be found by more or less approximate methods. The pivoting point, the drop of the bow, the clearance of bow and stern, the final trim afloat and the position of the model when it comes to rest are easily obtained from the record of the trimming masts.

In the figures presented by Mr. Hiley in his paper on the launching brake, the water resistance is assumed to

absorb about 20 per cent of the total energy of the vessel. This figure is necessarily quite approximate, for reasons stated at the beginning of this paper, and an attempt has been made at this point to arrive at a more definite value of this quantity. As is well known, the water resistance of the vessel during launching can be represented by the equation $R_w = K_1 V^2$, provided the cradle and other fittings are of such shape as to produce wave-making resistance only. This is not exactly the case, however, as the skin friction resistance is a considerable portion of the whole. The water resistance is best represented, therefore, by a simple equation of the form $R_w = K_2 V^3$. Although this equation, as it stands, does not conform exactly to the theory of mechanical similitude, it is used here as a means of simplifying the work. To translate model resistances into ship resistances would require an excessive amount of work, if this operation were to be carried out exactly as is done at the model basin.

By substitution and integration of the equation $R_w = K_2 V^3$, we find that the velocity-distance curve is represented by

$$\frac{M}{K_2 S} = \frac{K_1}{S}$$

the following equation, $V = \frac{M}{K_2 S} = \frac{K_1}{S}$ where V is the velocity and S the distance run, measured from a certain origin, K_1 and K_2 are constants. The value of K_1 for this hyperbolic curve

may be found by solving two simultaneous equations representing two points on the velocity curve where the vessel is clear of the ways and running freely.

THE curve of velocity thus obtained is only approximate, but it agrees closely with the curve as actually recorded, and it forms a convenient means of computing the water resistance during the period when the ship is being brought to rest by the brakes.

It has been necessary, throughout this paper, to comment rather briefly upon what is really a comprehensive subject, and it has been the intention to supplement this brief description with such plans as would serve to explain clearly the subject-matter of this article. Unfortunately, at the time this paper was prepared, the launch of the battleship CALIFORNIA had not taken place, and it was not possible to make extended comparison of the data obtained from the model and the final data from the actual launch. It is hoped that, when this matter has been worked up, there will be further opportunity to present it to the society in a subsequent paper.

The frame work of the big Bethlehem Shipbuilding Co.'s boiler plant at Fields Point, R. I., will be taken down and moved to a new site in Massachusetts, probably Boston, according to the navy department.

Belgium Extends Her Merchant Fleet

BY OUR PARIS CORRESPONDENT

CONCERNING the Belgian merchant marine as it exists today, the following facts were gathered on the spot during two recent visits to the martyred iron and steel industries of the gallant little kingdom.

A pertinent digression is to disclose the anecdotal history of the connection of King Albert with Belgian shipping. His hobby is driving a locomotive. America has first hand knowledge of this dating from his visit in 1898, when he was still Prince of Flanders and had not yet come to the throne. What is less known is King Albert's association with ships and shipping.

He is known to have been connected in a journalistic capacity with a before-the-war Belgian shipping journal, in which, rumor says also, he was financially interested. He is believed also to have had some magnificent plans for building up an extensive Belgian merchant marine. Of a war fleet, save for service in her Congo possessions,

Belgium has, or had, none, and it is not likely that she ever will have so long as the Scheldt remains a Dutch lake in its lower reaches. As a member of the staff of the shipping journal in question, King Albert was known to have gathered material for his articles therein in many if not all the ports of Europe, which he had visited incognito as the Comte de Rethy. For a fact when he visited James J. Hill at St. Paul in 1898 he went as plain John Bangs.

AT THE beginning of 1914, Belgium's merchant fleet comprised 236,00 net tons, composed of 125 vessels, belonging to 29 different owners. Of these 125 units, 115 were steamers. The largest operators were the Lloyd-Royal Belge and the Red Star line of American-Belgian composition. The chief home ports were Antwerp, a few hailing from Ghent, three at Ostende and two at Nieuport. The figures given are

an increase over those of the year previous of 56,000 tons, when the fleet was made up of 105 vessels, of which 97 were steamships and eight sailing craft.

During the war, a certain number of Belgian registered vessels were sunk by submarines or mines, or were captured.

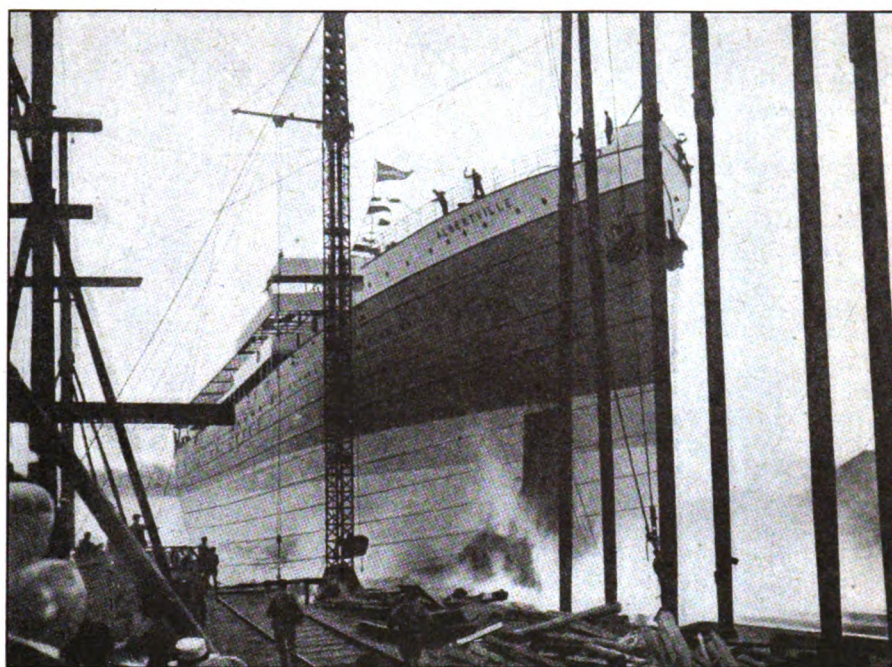
Belgian deepsea ships at the beginning of 1919 were of a tonnage of but 106,000 net, 55 being steamers and five sailing ships, belonging to 20 different owners, showing that the war caused absolutely no decrease in the number of private or company shipping owners. This was true in spite of the preponderance of German interests known to have been identified with Antwerp shipping previous to the war. The repartition of these ships between the different ports is not sensibly modified either.

Among the units the most important found under the Belgian flag of after-

war are the Red Star liner LAPLAND, 13,200 net tons; the VADERLAND of the same company, 8300 net tons; the ZEE-LAND, 7511 net tons; the LUXEMBOURG and the MINISTRE BEERNAERT, each 3100 net tons; the fleet of Ad Deppe, that of the Lloyd Royal Belge (though many of the latter are for a time flying foreign flags) and of the Compagnie Maritime du Congo Belge; the ELIZABETHVILLE, 4800 net tons and the LEOPOLDVILLE, 4300 net tons.

Various shipping firms of Belgium are looking to give to their enterprises a considerably increased tonnage. At the port of Antwerp alone the arrivals and departures of vessels in July, 1919, were 546, whereas those of July, 1914, were but 613. In 1914 Antwerp was the home port, or a port of call, for more than 100 regular established lines of passenger and cargo vessels.

The Rhenish-Belgian navigation, connecting the occupied Rhineland provinces with the deep sea was immediately resumed upon the signing of the armistice and while there is no exact formula by which these services, via Antwerp and Rotterdam may be compared as to bulk figures, the Belgian inland waterways enable regular services for freight to reach promptly Dusseldorf, Cologne, Coblenz, Mainz and Strass-



SHIP LAUNCH FROM THE COCKERELL STEEL PLANT, LEIGE

bourg at tonnage rates of today ranging from 8 francs per 100 kilos (220 pounds) to 14 francs 50 centimes.

Applications for berthing space have been made of the Antwerp port authorities by 60 different steamship lines. Work of extending port facilities in this,

already one of the chief ports of continental Europe, is being pushed rapidly to permit the entry of steamships of 1000 feet in length and 49 feet draft, obviously to attract a vast traffic which is bound to proceed to central Europe through this gateway.

Designs One-Man Control Wooden Tug

A SUCCESSFUL effort has been made in meeting the shortage of labor and the high wage problem by W. H. Gahagan, Inc., Brooklyn, N. Y. The company has designed and built a one-man-control tug, the HAMER, for its Arverne shipyards. The tug, which is shown in

the accompanying illustration, requires the services of only two men for all ordinary work performed by craft of this type.

The important departure in the construction of the HAMER is the use of a high-power crude-oil engine, which permits the helmsman in the pilot house

to start, stop, steer and perform every other duty which usually falls to several men on the ordinary steam tug. The motor is operated entirely from the pilot house, the fuel control being carried up to the wheel. The deck house is placed aft of the motor to insure the helmsman a view of his engine at all times.

The location of the towing bitts on the HAMER is such that she steers easily. Her owners say that the fuel capacity is in the neighborhood of 700 gallons, and the cost of fuel is economical.

The HAMER is constructed of yellow pine and oak, having frames 6 inches at the sides and with a 12-inch mold at the heel. Her planking and ceiling are both 2½ inches thick. All the exposed wood is waterproofed and her deck is set in red lead and oil. As a result of careful planning, the tug floats at her designed water line without ballast.

The dimensions are: Length over all, 51 feet 2 inches; length at water line, 44 feet 6 inches; draft aft, 5 feet; beam, 14 feet 6 inches over all. The tug is powered with a 100 horsepower crude oil engine, furnished by Fairbanks, Morse & Co., which drives her at 10 knots per hour, light.



HAMER, A WOODEN TUG POWERED WITH A CRUDE OIL ENGINE CONTROLLED FROM THE WHEEL HOUSE—HELMSMAN CAN SEE THE ENGINE AT ALL TIMES

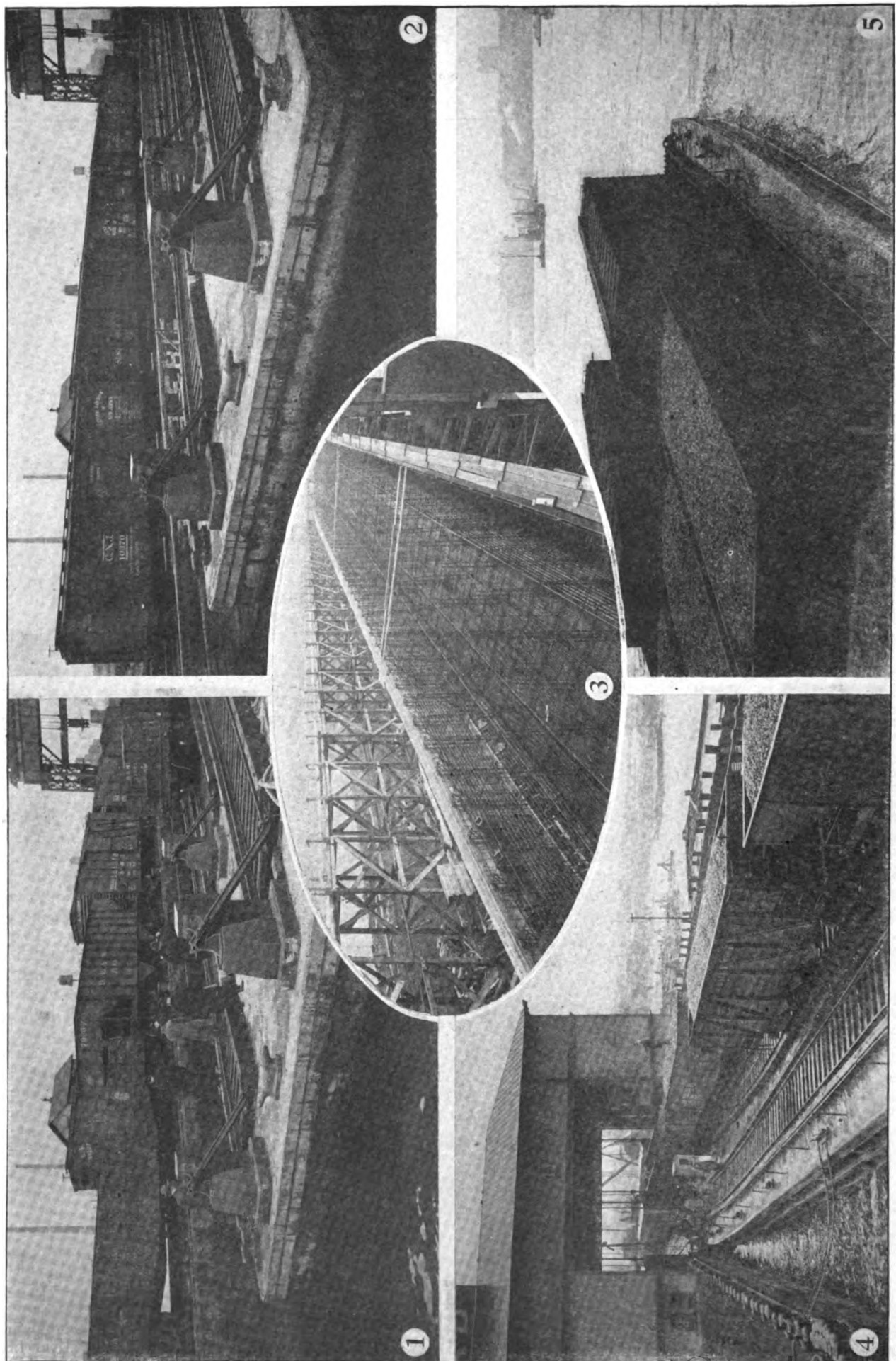


FIG. 1—CONCRETE CAR FLOAT SUBJECTED TO A SEVERE STRAIN BY BEING CAUGHT UNDER THE FENDER OF ANOTHER FLOAT FIG. 2—STERN OF CAR FLOAT TAILED OUT OF WATER TEN FEET CAUSED BY A HEAVY BOW LOAD FIG. 3—THOROUGH REINFORCING ENABLES THESE CONCRETE FLOATS TO WITHSTAND SEVERE STRAINS FIG. 4—CONCRETE CAR FLOAT SUBJECTED TO AN UNUSUAL STRAIN CAUSED BY ONE ENTIRE TRACK BEING PULLED WHILE THE OTHERS ARE LOADED FIG. 5—FULLY LOADED CONCRETE CAR FLOAT WITH $2\frac{1}{4}$ FOOT FREEBOARD

Concrete Floats Meet Hard Test

Stone Car Carriers Undergo Trials in New York Harbor—Floats Were Subjected to Unusual Strains to Determine Their Stability

BY W. T. DUGGAN

A SERIES of interesting tests of reinforced concrete car floats recently was made in New York harbor between the Bay Ridge terminal of the Long Island railroad and the Greenville terminal of the Pennsylvania railroad. The floats tested were built by the Liberty Shipbuilding & Transportation Co., Cleveland, and were fully described in the December, 1918, issue of THE MARINE REVIEW.

The barges were originally designed for the army transport service but now that their use in this field is ended they have been turned over to the railroad administration. In their truly experimental construction, it was aimed to carry 900 tons allowing two-foot free-board

as against a 72-ton average for the coal cars which were handled in this test. Summing up this detail, it is evident that 16 box cars, which is the track capacity of this float, would allow in excess of 3-foot freeboard.

A COMMERCIALY used car float in New York waters is known as a pier or platform float whereas the float above referred to is known as a transfer float. The pier float is constructed of two tracks with an unloading platform between tracks, as illustrated in Fig. 6, instead of three tracks which is the custom for transfer floats. This results in a capac-

mitted to maximum strains as shown in Fig. 4. In this case, when taking off the coal cars at Bay Ridge one engine was used and the south track entirely pulled, followed by the center track, which left the load entirely concentrated on the north track, noticeably listing the car float. This method of handling has been known to overturn a steel car float, such an accident occurring at Long Island City on the morning of the test.

Another severe strain was evidenced when the north track was pulled, the load concentrating on the bow end, which was toggled to the float bridge, being such as to submerge the float to the top of the rails while the stern tailed out of the water 10 feet. This is shown in Fig. 2. Carelessness on the part

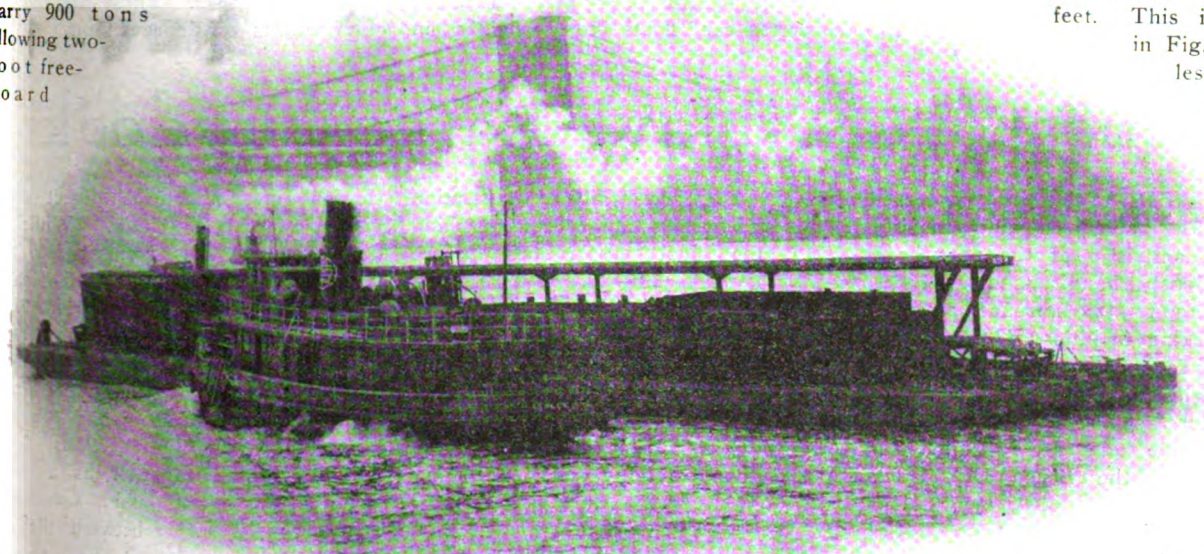


FIG. 6—TYPE OF PLATFORM FLOAT OFTEN USED IN NEW YORK HARBOR

loaded. Slight changes in construction, however, per-

mitted the loading of the float, which was inducted into service, to approximately 1000 tons and provide a 2½-foot freeboard.

The service between the two terminals mentioned entails the heaviest loadings in New York harbor as it is practically confined to moving heavy coal cars. Between practically all other terminals, a great proportion of box car freight is handled. This would result in a greater freeboard on this same float as the box cars average 45 to 50 tons over all

ity of but 12 cars. If this same float were transformed to this type with a maximum load of box cars, the freeboard could again be increased to allow between 3½ and 4 feet.

Another test was operated between the West Shaw terminal at Weehawken, N. J., and the Long Island terminal at Long Island City. This required operation down the Hudson river with the tide, around the Battery and up the East river against the tide. The tide on the day of the trial was the highest recorded in many months. Some of the passenger ferries had to stop operating until it receded. The float was sub-

of the bridge tenders accidentally submitted the

concrete float to another strain that proved her resistance, as shown in Fig. 1. When the concrete float was toggled to the float bridge at Long Island City she rode rather low in the water under her freight of 16 cars. A steel car float was empty and laying in the next slip. On account of a steel float's greater buoyancy, she floats around in a moving water more readily than a concrete float and this one did finally swerve over, the fender of the steel float resting on the deck of the concrete float. The steel float was then loaded and the load bore down on the stern of the concrete float. At the same

The author, who is vice president of the Liberty Shipbuilding & Transportation Co., Cleveland, personally supervised the construction of the car floats subjected to the tests described.

time, the concrete float was being unloaded naturally concentrating its load on the bow end. This resulted in the concrete float having to withstand a bearing down by weight on both bow and stern end simultaneously. The load of the steel float was so pronounced that two tugs had to be used to pull her off and the concrete was not as much as chipped.

THE tests afforded excellent opportunity for the concrete float to prove its resistance to varying strains. Practically the only criticism was the slow towing, which was partly occasioned by her deadweight and partly due to the fact that the fenders were constructed of longitudinal members with vertical strips placed between which proved a great resistance in the water. This can be greatly decreased by fendering the floats in the same manner as has been the practice on steel floats, namely by constructing 4 strakes of 8 x 12-inch yellow pine longitudinally and a vertical staving of 4 x 12-inch oak, 4 feet in length. This affords a solid 12-foot protection and serves as a wearing strip as well. The dead-

weight can be reduced an additional 300 tons with the use of manufactured light-weight aggregate which would reduce the deadweight to approximately 1000 tons.

This accomplishment can be best analyzed when it is stated that the first concrete car float constructed was of a deadweight of 1600 tons, while the second, which was the one tried out, weighed but 1300 tons. The weight was saved by changes in design as a result of findings during the construction of the first. The reduction to 1000 tons deadweight is the extent of the accomplishment of the builder to date. The fourth float constructed was fitted up with 16 strainagraph instruments which are to record the strains of loading and unloading to ascertain if the frame members can be further cut down or reinforced steel eliminated to additionally reduce the deadweight. What this would accomplish can best be understood when consideration is given to the fact that a steel float of the same given dimensions weighs approximately 750 tons.

Recent figures show that reinforced concrete car floats cost slightly in

excess of two-thirds the cost of steel floats. The increased deadweight does not effect the commercial advantage that would apply to a bulk cargo carrying vessel only insofar as slightly greater resistance in towing is concerned. This is due to the fact that a car float of even dimensions whether it be of steel, wood or concrete affords only track space for a certain equal number of cars, and cannot be computed on the same basis as a cargo carrier that affords an area either in holds or on deck over which a bulk cargo could be spread.

ENGINEERS of the Liberty Shipbuilding & Transportation Co. believe that concrete car floats can be constructed sufficiently impervious and with enough protection of the reinforcing material to prevent corrosion. A survey of the uses of car floats in New York harbor proves that the working of the floats will not set up stresses on the steel sufficient to cause fatigue of the metal as would be occasioned on the high seas. These are the two chief causes of depreciation.

Pensacola to Have Large Drydock

PENSACOLA harbor possesses many natural advantages but the activities of the port have been seriously handicapped in times past owing to the absence of adequate docking facilities. Thus steamship lines connecting with the South have sought docking facilities in other port centers.

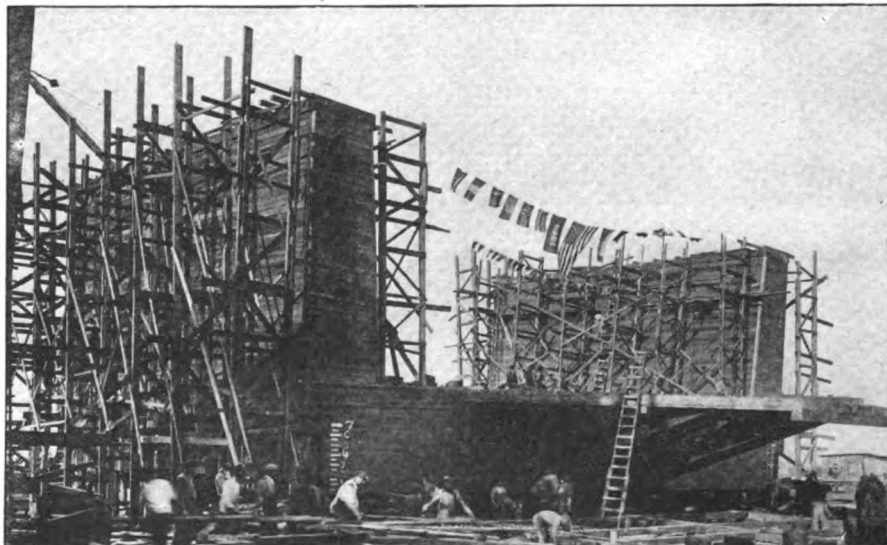
To provide adequate docking accommodation, the Bruce Dry Dock Co., is building a 5-section floating wood drydock with a normal floating capacity of 5000 tons. The estimated cost of the improvement is \$450,000 and work on it is well under way. Two sections of the dock have been launched while work on the remaining three sections is progressing rapidly. The first section was launched on Dec. 18, while the second section took the water on

Jan. 3. The accompanying illustration shows the first section before launching when the final preparations before sawing the launching blocks were being made.

The dock was designed by James L. Crandall, consulting engineer, East Boston, Mass., the contract for its construction being sublet to the Aberthaw Construction Co., Boston. Actual construction work is being

carried out under the direct supervision of C. R. Craig. While the dock's capacity is given at 5000 tons, it will have a maximum lifting capacity of 6000 tons. It is 380 feet long, 94 feet beam, 78 feet 2 inches between wings, 12 feet depth of pontoons, and 18 feet over 3½ foot keel blocks.

The dock is of all wood construction made in five sections which will be joined together as a single unit. Connections between the sections, together with the truss members incorporated into the side walls form a continuous truss over the whole length. The proportions of the several sections are such that any section can be docked on one or two of the other sections for the purpose of inspection and repairs. Connections between the sections are through the medium of



FIRST SECTION OF A 5-SECTION DRYDOCK BEING BUILT AT PENSACOLA, FLA.—THIS STRUCTURE WILL HAVE A MAXIMUM LIFTING CAPACITY OF 6000 TONS

heavy pins capable of ready disconnection.

Pumping facilities consist of vertical centrifugal pumps, placed at the bottom of the sections, one pump to each transverse compartment. The several pumps are driven by separate motors, the motors being connected to the upper ends of the pump shafts. The dock is ballasted to sink it to the required level by pumping in water. Pumps and motors are of a capacity to raise the dock, together with a 5000-ton vessel, in one hour. Operation of the dock will be controlled from the dock master station on the pier at the head of the dock.

The pump motors are controlled from a central switch house in close juxtaposition to the dock master's station.

A water registering system will be installed to show the level of the water in each of the compartments at all times. The indicators are located at the ends of the side walls where they can readily be observed by the dock master. The dock will be equipped with capstans at each end of the side walls and a full line of releasing bilge blocks operated by chains. These chains are to be operated by hand winches. Keel blocks will be solid hard wood.

As a protection against the rav-

ages of toredoes, which are always active in semitropical waters, the dock is to be sheathed over the bottom and up the sides to a point well above the load waterline. This sheathing is to be laid in two layers, each layer consisting of felt put on with a tar coating and covered with a double thickness of creosoted boards fastened in place with galvanized nails. The entire dock is being built of wood similar in strength and weight to American long pitch pine, with the exception of the keel blocks which are hard wood. When the dock is in operation, Pensacola will be in a position to increase its commerce materially.

Will Re-Establish Coastwise Law

BY L. W. MOFFETT

THE senate committee on commerce is expected to report favorably the house bill repealing wartime legislation touching the coastwise trade of the United States, with every indication that the bill will pass the senate. The house passed it last August. Some difference of opinion appears to exist in the senate committee, as there was in the house committee on merchant marine and fisheries and in the house, over that feature of the bill, permitting vessels of foreign registry and foreign-built vessels admitted to American registry, to carry passengers from or to ports in the territory of Hawaii to or from ports of the United States, except ports in Alaska. The house bill would permit a continuance of service between the United States and Hawaii until the President is satisfied that sufficient American vessels are engaged in that passenger trade to accommodate requirements. The permits would be issued by the collector of customs for the district in which is situated the port of embarkation, and would be granted after July 1, 1920, only upon payment to the collector of a fee of \$40 for each passenger so carried. The secretary of the treasury and the secretary of commerce would jointly make regulations necessary for the issuance of such permits.

The bill proposes to repeal the act of Oct. 6, 1917, which gave the shipping board the power to permit vessels of foreign registry, and foreign-built vessels under American registry, to engage in the coastwise trade during the war and for 120 days thereafter, except coastwise trade with Alaska. The purpose of the bill was to allow foreign ships by permit to

participate in the American coastwise trade that the larger American ships so engaged, prior to the entry of the United States into the war, might be used for important transoceanic trade.

Representative Frank D. Scott, author of the bill, a member of the house committee on merchant marine and fisheries, in taking charge of the measure on the floor of the house, said the necessity for the act of Oct. 6, 1917, has virtually ceased, except in the instance relating to the Hawaiian trade. The incomparable coastwise trade, he said which has been built up under the protection afforded American citizens by the provisions of prewar legislation emphasizes the necessity of returning to prewar conditions as soon as possible. It is maintained that not only American citizens, but the American merchant marine are vitally interested in this result.

MR. SCOTT said it must not be overlooked that during the war a large amount of tonnage both passenger and freight was diverted from the Pacific to the Atlantic ocean. Virtually no portion of that tonnage has been returned, he declared, and it is evident no substantial portion can be returned for some time to come. In consequence, the islands of Hawaii are confronted with a situation which has been and will continue to be acute, he said, until relief is granted by congress.

"At present the freight tonnage is virtually sufficient to answer the needs of the islands of Hawaii," he explained, "but the passenger tonnage is grossly inadequate."

President Dillingham, of the cham-

ber of commerce of Honolulu, has summarized the situation as follows:

"We have lost practically all of our passenger boats since the entry of the United States into the war. Our best boats were taken to the Atlantic and used in the transport of troops overseas. Instead of having accommodations for 300 a week on an average we have been reduced to an average capacity of about 50 a week. If no action is taken as now suggested by H. R. 7500 (Scott bill) we are going to be practically marooned in the Pacific."

While there appears to be some sentiment in the senate committee on commerce as well as in the senate to strike out the exception as to the Alaskan trade and to permit all vessels under American registry to operate permanently in the coastwise trade, it seems evident such a view is entertained by only a small number and that it will not prevail. Consequently it is probable that the Scott bill will pass the senate without substantial, if any, change.

The Chickasaw Shipbuilding & Car Co., Mobile, Ala., a subsidiary of the Tennessee Coal, Iron & Railroad Co., recently launched the CHICKASAW CITY, an all-steel 9600-ton cargo vessel. Steel for this vessel was produced and fabricated in the South. The vessel was sponsored by Mrs. Crawford, wife of George Gordon Crawford, president of the Tennessee company. The Chickasaw company has contracts for building several ships of the same size and type as the one just launched. These vessels are building for the United States Steel Products Co., the export subsidiary of the United States Steel Corp., owner of the Tennessee company.

Marine News in a Personal Way

Intimate Gossip About What Leaders in the
Maritime World Are Doing

GEORGE F. SPROULE has been appointed director of the department of wharves, docks and ferries, Philadelphia. Mr. Sproule is an all around navigation and shipping expert. He was born in 1867 and has been connected with the shipping interests of the port of Philadelphia for practically all of his business life. He entered the office of the board of port wardens in 1884 and was elected secretary of the board in 1888. He held this position continuously until 1907 when the old board of wardens was abolished and the board of commissioners of navigation created in its place. Mr. Sproule was its first secretary.

* * *

I. F. BAKER, of the Westinghouse Electric International Co., who has been located in the company's New York office, has been transferred to Tokio, Japan, where he will act as special representative of the company.

* * *

CAPT. FRANK S. CARTER recently was appointed marine superintendent for the Charles M. Megee Co. Captain Carter formerly was a lieutenant commander in the United States navy where he served 11 years. He holds a master's certificate for any class of vessel in any sea besides a chief engineer's certificate for any size ship.

* * *

CAPT. R. B. POWERS, who formerly was in command of the shipping board steamer ECLIPSE, has been appointed marine superintendent for the division of operations of the shipping board, Delaware district. He succeeds CAPT. H. F. KENT who resigned to become general manager for Charles Kurg & Co., Inc.

* * *

EDWARD D. KILBURN, who since March, 1917, has been New York district manager for the Westinghouse Electric & Mfg. Co., recently was elected vice president and general manager for the company.

* * *

JAMES J. MCGOWAN has joined the staff of the Potter Transportation Co., New York, in the capacity of traffic manager. The Potter company is an operator of shipping board vessels.

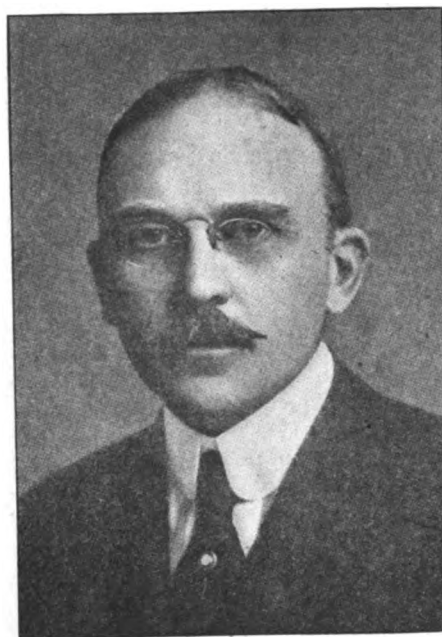
Formerly Mr. McGowan was vice president of Benham & Boyesen, agents of the Norwegian-American line.

* * *

ROBERT E. PEABODY, vice president of John S. Emery & Co., Inc., Boston, and ARTHUR LANE, traffic manager, have resigned to become connected with Rogers & Webb, a new firm to be engaged in foreign steamship business out of New York.

* * *

LIEUT. COM. R. T. MERRILL, 2ND, has been appointed general superin-



W. T. ROACH

Mr. Roach recently was appointed manager of the International Mercantile Marine Co., Philadelphia

tendent of the Oriental Navigation Co. He is a graduate of Annapolis and has served 14 years in the navy. He is the author of a history of naval machinery.

* * *

AARON HOUTMAN, who for 34 years was connected with the Barber interests, has retired from every-day business but he will retain the vice presidency of the Barber company and his membership with the directorates of the Barber companies.

* * *

HENRY B. KING, formerly with the Panama Railroad & Steamship Co., has

joined the force of the S. L. Burgess & Co., Philadelphia, chartering agents and ship brokers. Mr. King has charge of the freighting and contracting department of the company.

* * *

SIDNEY A. BOULTON recently was elected chairman of Lloyd's, London, for the present year while E. E. ST. QUINTIN was elected deputy chairman.

* * *

C. B. HORTON has been appointed manager of John S. Emery & Co., Inc., ship brokers, Boston.

* * *

JAMES A. LEARY, formerly New England agent of the Delaware, Lackawanna & Western railroad, has been appointed traffic manager for the fleet of John S. Emery & Co. CAPT. I. SPARKS, formerly of the United States shipping board, has been appointed port captain of the same fleet.

* * *

DARRAGH DELANCEY, formerly director of the marine and dock industrial relations division, has been appointed by the United States shipping board director of a new department known as the division of industrial relations which will handle all questions of labor policy affecting shipping.

* * *

LIEUT. COM. JOHN D. SLOANE, public works department of the Charlestown navy yard, Charlestown, Mass., has gone on the inactive list effective Dec. 31.

* * *

REAR ADMIRAL HERBERT O. DUNN, commandant of the first naval district, Boston, recently received the distinguished service medal given by the navy department.

* * *

SHIRL H. BLALOCK has been appointed district office manager of the bureau of foreign and domestic commerce, department of commerce, with headquarters in the Henry building, Seattle. He has been a member of the bureau for several years.

* * *

CHARLES H. FREEMAN has been made manager of the Norfolk, Va., office of Furness, Withy & Co., Ltd.

Marine News in a Personal Way

Intimate Gossip About What Leaders in the
Maritime World Are Doing

HENRY J. CLAY, formerly with Alfred H. Post & Co., New York, has become connected with Berard, Judae & Co. as manager of the contract department. He will arrange freight bookings for the company's entire organization.

* * *

WILLIAM J. REITZ recently was elected president of the Pittsburgh Rivet Co., which has completed its organization. Other elected officers are: JACOB H. REITZ, vice president; JOHN F. LEHRIAN, treasurer, and ROY A. REITZ, secretary.

* * *

MICHAEL J. STACK has been appointed assistant marine manager of the Diamond Power Specialty Co., Detroit. Mr. Stack will make his headquarters in the office of the company's marine manager, F. W. Leahy, New York City. Mr. Stack is a practical man, being a machinist by trade as well as a marine engineer.

* * *

H. C. RUSSELL has been appointed purchasing agent of the Virginia Shipbuilding Corp., succeeding HARRISON LORING who resigned recently.

* * *

CAPT. STEPHEN V. GRAHAM, United States navy, has been assigned the post as head of the New York branch of the hydrographic office. He succeeds COM. C. P. EATON. Captain Graham has seen active service in the navy for the past 20 years.

* * *

A. E. DECLERCQ recently joined the sales force of the Tacony Steel Co., Philadelphia. Mr. Declercq, who will travel in Detroit and vicinity, is a metallurgist of 12 years' experience.

* * *

PAUL P. STEWART recently was elected president and general manager of the Pensacola Shipbuilding Co., Pensacola, Fla. CAPT. JOHN M. SWEENEY has resigned from the vice presidency of the company.

* * *

CAPT. ARTHUR R. MILLS has had the cross of the French Legion of Honor conferred upon him. He is commodore of the American line fleet, commander of the liner *St. PAUL*, and recently

was in charge of the U. S. S. *MONGOLIA*. The decoration was given him for his splendid seamanship in towing the disable six-funneled French cruiser *JEANNE d'ARC* over 400 miles to a safe anchorage in the Azores last July, after having transferred the president of Brazil and his staff to the U. S. S. *IMPERATOR*, bound for New York.

* * *

MARTIN C. ERISMANN has joined the interests of Eads Johnson, M. E., Inc., marine engineer and naval architect, New York. Formerly Mr. Erismann was



G. E. WALTER

Mr. Walter recently was appointed manager of Gueret, Jacks & Partners, Inc., Seattle

first naval architect for the Carolina Shipbuilding Corp., Wilmington, N. C.

* * *

CAPT. ROBERT DOLLAR was appointed a director of the Canadian Robert Dollar Steamship Co., Ltd., which recently held its annual meeting at Vancouver. B. C. Other appointed directors are: STANLEY DOLLAR, HAROLD DOLLAR, MELVILLE DOLLAR and KENNY BURNS.

* * *

J. D. ANDREW, formerly superintendent of the Canada Steamship Lines, Ltd., London, Eng., has been appointed superintendent of freight steamers with jurisdiction over all lines. Mr. An-

drew's office is at Montreal, Canada. R. McLAREN, formerly assistant mechanical superintendent, Toronto, Ont., has been appointed assistant superintendent of freight steamers with offices at Toronto, Ont.

* * *

CAPT. BERTRAND FAY has been appointed marine superintendent for the International Maritime lines, New York. Captain Bertrand is a master mariner and has had many years experience in the port of New York. In 1918, he went to France in the army transportation service. On his arrival in France he was assigned to duty as marine superintendent at the port of Nantes. In February, 1919, he took up similar duties at St. Nazaire when the marine superintendent of that port fell ill. While at St. Nazaire he handled the repair operations of all American ships, tugs and other floating equipment.

* * *

CORNELIUS W. BUCHANAN, formerly connected with A. H. Bull & Co., has joined the staff of David Cohen & Co., ship owners, brokers and agents, New York. Mr. Buchanan is in the chartering department.

* * *

GEORGE W. STERLING, vice president of the Eastern Steamship Co., has been appointed assistant director of the division of operations of the United States shipping board, located at 45 Broadway, New York. MAJ. J. E. CUSHING, who has been assistant director, has gone to Washington to become director of the division of operations. Mr. Sterling, who served with the board during the war, will have charge of 70 per cent of the shipping board's fleet of approximately 1200 ships.

* * *

DANIEL C. COOKE has been made manager of the New Orleans office of the Trans-Oceanic Co., a subsidiary of the Ocean Transport Co., Ltd., Japan. The New Orleans office will handle the business of the Mississippi valley and will furnish cargoes for the ships the Trans-Oceanic Co. is placing in operation between New York, New Orleans and the Orient, via the Panama canal. For the past eight months, Mr. Cooke was assistant to the manager at the company's Seattle office.

Problems of the Vessel Operator

Description of an Approved Method of Taking on Fuel Oil at Sea Adopted By the Navy—Will Establish World Agencies

COMMANDER H. C. DINGER, U. S. N., writing in the United States naval institute *Proceedings*, has detailed the efforts made to fuel at sea, a problem which has a great interest to the merchant marine as well as to the navy. He says that to transfer coal or oil while towing one vessel astern another has not been successful, although when towing abreast and maintaining the position the problem becomes comparatively simple. The first instance of fueling at sea was in the case of the U. S. S. MAUMEE in May, 1917. The official instructions to the ships upon this instance stated:

1. Gear—All supplied by fuel ship.

Ten-inch Bow Spring—This line is led from the bow of the fuel ship and stopped along the rail. A 2-inch messenger is bent on about 50 feet from the end and stopped along to the end. This line should be taken in on destroyer bow through bitts just forward of the bridge. Take the messenger to the capstan and assist handling by hand. Cut stops as they come to the bitts. Take a turn around the base of gun mount and secure the end to the bitts on the opposite side. Be sure that the hawser is secure around the base so that it will not ride up on mount. As soon as the end is secured, notify the fuel ship. The fuel ship will then heave into place the destroyer in the proper position. Put lashings around and over bitts to prevent the hawser jumping.

2. Breast Lines, 6-Inch—Forward, take in through the bitts forward of the forward gun and then to the bitts forward of the capstan. Do not secure to the capstan as it may be damaged. This line must be securely fastened as a heavy strain may come on it.

3. After Line—Take through bitts in the wake of the deck house. Secure and stand by to tend.

4. Hose—The hose, two lines, are led together through a wooden carrier supported from a boom. Near the end of the hose, there is a wooden yoke to which is attached a handling line. The hose should be handled on board the destroyer with this line—not with the end of the hose. The rail should be broken down and clear where the hose is taken aboard. Get the ends of the hose and the hose yoke on the destroyer and secure the yoke. Then put the ends of the hose in the tanks.

Pumping will start as soon as the destroyer reports ready.

5. Handling of Destroyer—Come along on a parallel course at a speed of about 8 knots at a distance of about 50 feet from fuel ship. Slow down to keep abreast of the fuel ship and ease in or out as necessary but do not drop aft too far so as to get under the counter. When the 10-inch spring is fast, drop down on it slightly and let the fuel vessel take in on the breast lines until the desired position is reached, about 40 feet from the side. Then maintain about a 4-knot speed, just keeping a slight or an occasional strain on the 10-inch spring. The destroyer will then ride to the 10-inch spring and forward breast lines. Do not head out suddenly as this will break away the forward breast line. Speed up if necessary to take the strain off the 10-inch spring and keep from swinging in too close.

The breast lines keep the destroyer in and prevent hose being carried away. Destroyers can come abreast and make connections in moderate sea without danger if precautions mentioned are adhered to. The principal danger is coming too close and throwing the stern in. A speed of about 5 knots is maintained by the fuel ship. This is necessary in order to steady the fuel vessel and enable her to steer a straight course. The fuel vessel must steer a straight course. Rolling is not objectionable but yawing is. Hence the sea should be abeam or slightly forward of the beam.

Before coming alongside, the destroyer should have her forecastle clear, rail clear for hose, have lashings and capstan ready and men instructed where the lines are to be led. Lines must be securely fastened. In smooth weather one destroyer can be taken on each side, and if the sea is calm, destroyers can make fast and receive oil as they do in port.

Commander Dinger said: "The first time that this was tried was in a moderate sea. The destroyers were each oiled in about two hours, and oil was delivered at from 30,000 to 40,000 gallons an hour. In some cases destroyers were connected up and oil was being pumped on board in 15 minutes from the time the destroyer passed the stern of the fuel vessel. This was done with a vessel that had never previously gone through the operation. With prac-

tice, a destroyer could, no doubt, connect up in 10 minutes.

"In a rough sea, the fuel vessel makes a lea, taking sea a little forward of beam. In smooth weather a destroyer can be taken on each side while steaming 8 to 10 knots, one vessel connecting up while the other is having oil delivered. When towing abreast, both vessels are entirely and instantly under full control of their engines and helm. Lines can be cast adrift without danger of fouling of the screws. The whole operation can be viewed by the captain from the bridge of each vessel and the two vessels are in direct verbal communication all of the time that they are close to each other. In towing astern or from the quarter, this is not the case, and unless the officer in control of either vessel can see fully what the other is doing, difficulties are likely to be presented.

"Fueling cannot be attempted in rough weather, but a fairly smooth sea can usually be found in the course of several days, except in specially tempestuous waters. The method employed with destroyers can be used for much larger vessels, though perhaps it could not be done in as rough a sea."

To Establish Agencies

In a letter to the state department, John Barton Payne, chairman of the shipping board, recently asked the co-operation of consuls throughout the world with agents to be sent by the board to various ports. Mr. Payne announced that it has been decided to establish agencies at the following points:

London, Liverpool, Newcastle, Cardiff, Paris, Havre, St. Nazaire, La Rochelle, Dunkirk, Bordeaux, Antwerp, Hamburg, Copenhagen, Naples, Gibraltar, Lisbon, Bermuda, Havana, Panama and Shanghai.

General executive offices for Europe will be located at London. The Paris office will be in charge of other French agencies. Agents are to be sent by the board to the various points who are familiar with the language of the particular country.

Assurance has been received from Josephus Daniels, secretary of the navy, that the Victory plant at Squantum, Mass., will not be abandoned but will remain as a permanent naval base.

Traffic on Great Lakes in 1919

Freight Movement on the Inland Seas Quiet Throughout the Season—19 Vessels Were Lost—Four Bulk Freighters Building

WHILE a large amount of bulk freight was moved on the Great Lakes during the season of 1919, the totals fall short of the 1918 movement. The figures are: 83,221,435 gross tons for 1919 which when compared with the figures for 1918, amounting to 105,063,301 gross tons, show a decrease of 21,841,866 gross tons. The figures for both 1919 and 1918 include shipments of limestone, a branch of lake transportation which is steadily growing in importance. The stone movement for 1919 amounts to 5,720,790 gross tons, a decrease of 946,868 tons. The record year for lake freight in 1916, was when the huge total of 99,600,000 gross tons of iron ore, coal and grain were moved. Subtracting the stone movement from the 1919 total, the figures for ore, coal and grain are 77,500,645 gross tons. Comparing this figure with that for 1916, the record year, a decrease of more than 22,000,000 gross tons is shown. In round

numbers, this amounts to a 22 per cent decrease.

The prime cause for the 1919 decrease over that of 1918 was unsettled industrial conditions. Strikes of lake dock workers retarded shipments for a time and the steel strike naturally lessened

demands for ore and stone. Boats were plentiful throughout the year but the demand for bottoms was light. Several bulk freighters went into winter quarters early in the fall and many went into commission several months after navigation opened. Many shippers

state that the past season was the most unsatisfactory of any they have ever experienced. Earnings were small compared with the three previous seasons and some boats lost money for their owners. The prevailing conditions could not be altered as carrying prices were cut in all lines while a gigantic slump in the ore, coal and grain movement was in evidence. The fact that a large amount of time was lost by vessels being compelled to remain idle in port is in a great measure responsible for the reduced earnings. Labor trouble on the lakes started on the coal docks at the Canadian head of the lakes in July and some of the boats were held in port for three weeks. The ore handlers at most

Great Lakes Traffic Statistics

COMMERCE THROUGH SUEZ CANAL

Items	Total traffic for—		Increase or decrease—		
	Season 1918	Season 1919	Amount	Inc.	Dec.
Vessels:					
Steamers	17,067	14,866	2,201	..	18
Sailing	1,634	1,218	416	..	25
Unregistered	1,909	1,503	406	..	21
Total	20,610	17,587	3,023	..	15
Lockages	14,903	12,302	2,601	..	17
Tonnage:					
Registered	61,100,244	50,089,090	11,011,154	..	18
Freight	85,680,327	68,235,542	17,444,785	..	20
Passengers	34,990	56,992	22,002	63	..
Lumber	296,919	244,426	52,493	..	18
Flour	8,228,844	8,087,554	141,290	..	2
Wheat	122,718,146	113,734,848	8,983,298	..	7
Grain	30,800,621	52,734,345	21,933,724	71	..
Copper	86,078	58,409	27,669	..	32
Iron ore	60,551,296	46,922,792	13,628,504	..	23
Mfd. and pig iron	38,767	117,713	78,946	204	..
Coal, soft	15,770,560	11,461,962	4,308,598	..	27
Coal, hard	2,211,050	2,412,989	201,939	9	..
Salt	81,007	93,893	12,886	16	..
Oil	334,134	387,023	52,889	16	..
Stone	402,009	371,170	30,839	..	8
General Mds.	494,437	542,178	47,741	10	..

The United States canal was opened April 10 and closed Dec. 15, 1919; season, 250 days.
The Canadian canal was opened April 12 and closed Dec. 15, 1919; season, 248 days.

COAL MOVEMENT ON LAKES, NET TONS

Year	Soft coal				Hard coal	Total coal movement
	Pittsburgh	Ohio	Virginia	Total*		
1919	7,611,005	10,031,577	9,217,790	22,750,392	4,710,727	27,461,119
1918	7,581,465	8,327,460	10,451,667	26,360,592	3,948,705	30,309,297
1917	8,674,000	5,163,000	9,491,000	23,328,000	4,689,983	28,017,983
1916	10,100,000	2,620,000	8,750,000	21,470,000	4,423,800	25,893,800
1915	11,195,000	1,363,000	9,106,000	22,905,000	4,285,228	27,190,228
1914	13,415,473	6,176,624	8,736,586	28,328,683	5,033,696	33,362,379
1913	11,300,000	4,676,000	7,360,000	23,335,000	4,204,741	27,539,741
1912	10,611,941	4,019,544	7,151,200	21,782,685	3,917,419	25,700,104
1911	11,911,900	4,297,300	6,629,500	22,838,700	3,639,368	26,478,068
1910	8,687,395	3,002,815	3,874,570	15,564,690	3,052,706	18,617,396
1909	8,700,000	3,600,000	3,450,000	15,750,000	3,538,098	19,288,098
1908	10,549,995	4,074,296	3,420,941	18,045,232	3,449,695	21,494,927
1907	9,237,272	2,590,906	2,743,732	14,571,910	2,681,808	17,253,718
1906	7,443,883	2,062,692	2,108,262	11,615,837	2,785,362	14,401,199

*Includes fuel coal and also shipments from the Kentucky district and Pennsylvania districts other than Pittsburgh.

GRAIN TRADE OF THE GREAT LAKES

(Shipments of flour not included)

	1919	1918	1917	1916	1915
Lake Superior	171,047,586	154,830,332	253,315,244	319,252,876	320,236,805
Chicago	43,787,244	68,842,269	5,947,955	25,058,000	44,438,000
Milwaukee	6,931,005	17,431,766	1,924,385	3,188,280	4,324,428
Other ports	1,611,943	4,188,587	1,668,317	16,500,000	17,020,142
Totals, bushels	223,377,858	245,292,954	262,855,801	363,999,156	386,019,375
Totals in net tons	6,091,701	6,548,680	7,161,716	10,553,975	11,194,562

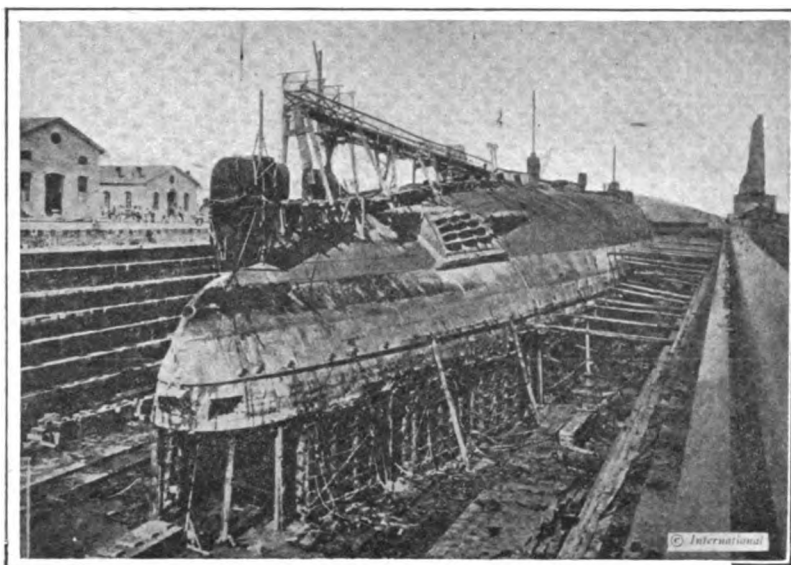
CONTRACT FREIGHT RATES ON IRON ORE AND COAL

	Cents, 1919	Cents, 1918	Cents, 1917	Cents, 1916	Cents, 1915	Cents, 1914	Cents, 1913	Cents, 1912	Cents, 1911
Iron ore, head of Lake Superior to Ohio ports, gross ton....	80	100	100	50	40	50	55	50	60
Iron ore, Marquette to Ohio ports, gross ton.....	72	90	90	45	35	45	50	45	55
Iron ore, Escanaba to Ohio ports, gross ton.....	60	75	75	35	25	35	40	35	45
Coal, Ohio ports to Lake Michigan ports, net ton.....	42.5	55	50	30	30	30	30	30	30
Coal, Ohio ports to Duluth, net ton.....	42.5	48	42.5	30	30	30	30	30	30

AVERAGE DAILY FREIGHT RATES ON GRAIN AND LUMBER

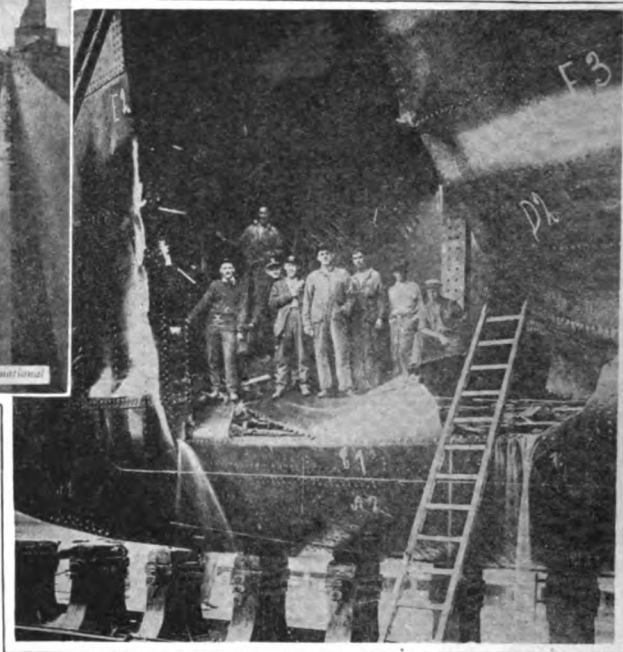
	Cents, 1919	Cents, 1918	Cents, 1917	Cents, 1916	Cents, 1915	Cents, 1914	Cents, 1913	Cents, 1912	Cents, 1911
Wheat, Duluth to Buffalo, bushel.....	3.63	4.67	5.13	4.18	2.25	1.14	2.01	2.02	1.17
Wheat, Chicago to Buffalo, bushel.....	3.00	3.82	2.50	3.08	1.20	1.13	1.43	1.39	1.08
Lumber, head of lakes to Lake Erie ports.....	498	491	450	364	261	225	256	276	260

Latest Marine News in Pictures



The Italian dreadnaught Leonardo da Vinci which recently was towed upside down into drydock at Otranto

Of the five United States steamers that have struck drifting mines since September, 1918, the Guimba was the only one saved. The size of the hole torn in her side may be judged by comparison with the men



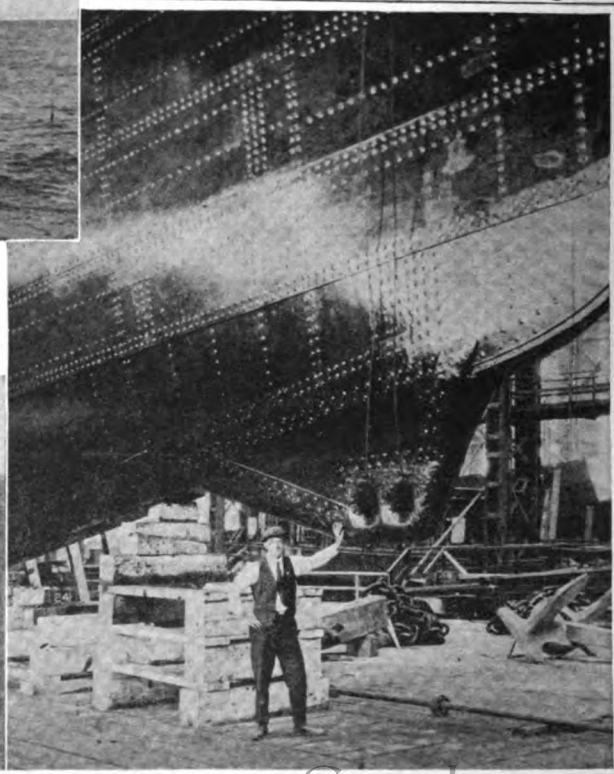
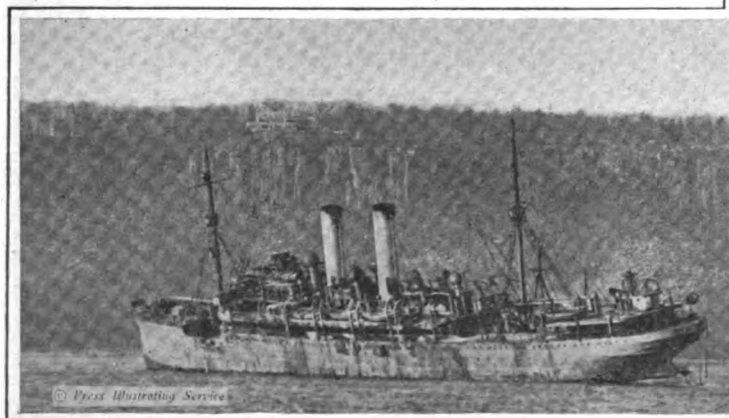
A "closeup" of the otter gear attachment as placed on the steamer Sea Girt at the yards of the New York Shipbuilding Corp., Camden, N. J.



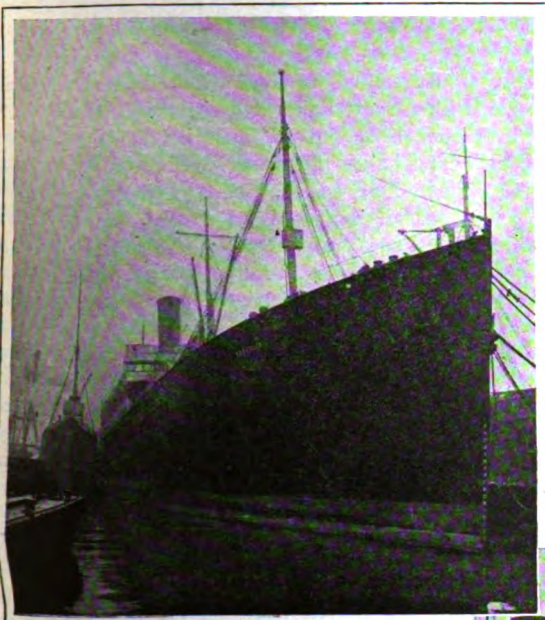
The steamer Afel rescued the crew of the British steamer Sizergh Castle when outbound and on her trip homeward rescued the crew of the British barkentine Ebba



The United States army transport De Kalb which has been lying in the North river after taking fire



Photographs From Far and Near

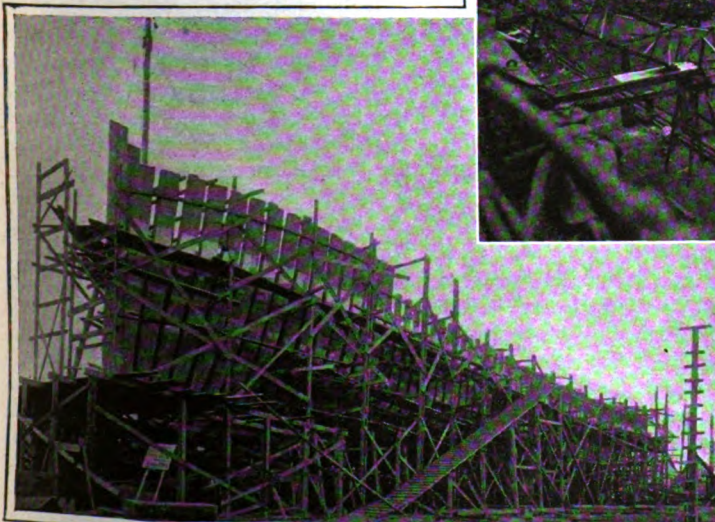
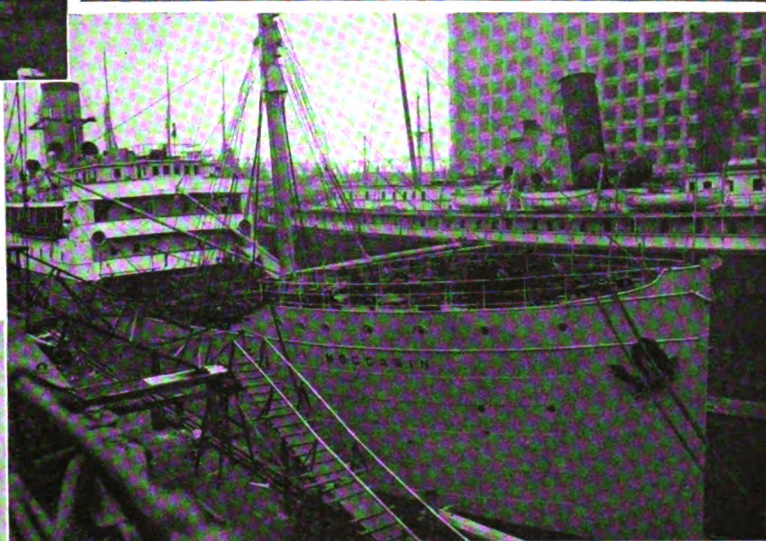


Mongolia, formerly a Pacific liner, has been assigned to the New York-Hamburg service of the American line, and is being converted into an oil burner



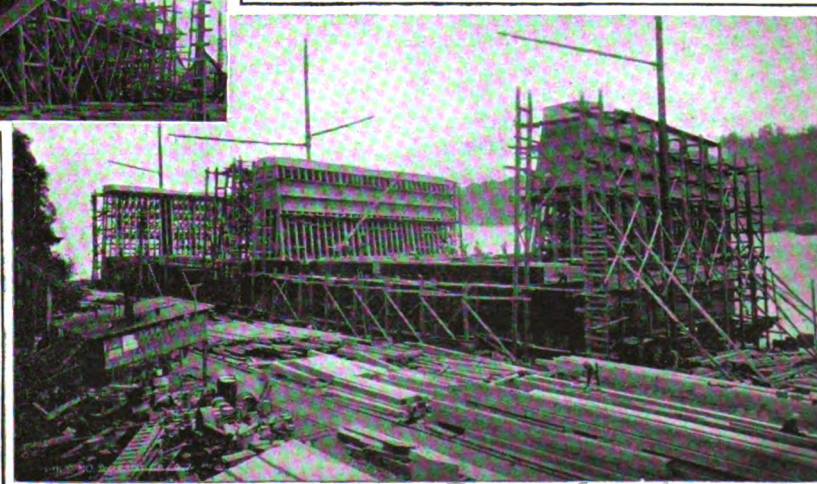
Huron, shown above, and Moccasin, below, formerly German liners, being equipped by the government for the South American passenger service. Huron will be an oil burner.

© by Paul Thompson



Wood ships require massive timbers. Wooden hull in frame at Puget Sound, showing the heavy timber construction

Pontoons Nos. 1 and 2 of the Skinner & Eddy Corp.'s floating drydock, now in operation at Seattle



How Underwater Signals Operate

A Submerged Bell Emits Vibrations That Are Readily Picked Up by Microphone Apparatus Installed on the Vessel

BY HERBERT R. SIMONDS

PART of the equipment of United States submarines is an oscillating signaling device by means of which submerged vessels may communicate with each other and with a mother ship on the surface. With this equipment dot-and-dash codes can be used in the same manner as in the usual system of telegraphy. The range of operation is in excess of 25 miles. Until recently, the details of this method of communication have been closely guarded by the navy department but they are now being disclosed and will appear fully in a later issue of THE MARINE REVIEW. Other methods of underwater signaling have been in the course of development for many years, yet the possibilities of this form of sound transmission have not been fully appreciated until quite recently.

The Submarine Signal Co., Boston, has made great progress in the development of underwater signaling. This company's equipment is used on American submarines and the firm's bell signals and receiving apparatus are at present directing ships through the fog in many parts of the world.

The submarine bell signal system is entirely distinct from the oscillating method of communication used by the submarines, yet all underwater signaling has in common certain advantages over any method of atmospheric communication at sea. Fog, snow storms and heavy seas are without effect upon it. It is independent of the direction of the wind or of atmospheric disturbances. It is said to be as reliable as wireless, has a much greater range than fog horns or fog bells and a greater range than lights in any but the clearest atmosphere. It forms, in fact, a practical warning device against danger in heavy weather.

From the installations already made reports of accidents avoided through submarine bell signals have been received. The captain of the D. M. CLEMONS, a lake bulk freighter, said

recently: "We were bound down from Duluth when a gale, accompanied with snow hit us. We could not even hear our own whistle, but I heard the bell at Whitefish point when 10 to 12 miles away.

"In addition to the warning which submarine bells offer against danger, they open up many possibilities in the way of

stalled on some 60 or 70 vessels on the Great Lakes and signal bell stations have been put in operation at 10 points on Lakes Superior, Michigan, Huron and Erie, so that this type of device assumes an increased interest at this time. The apparatus consists of a bell which is either let over the side of a ship or carried on a tripod placed on the lake bed some distance out from a shore lighthouse. The bell is operated either electrically, pneumatically or automatically. The standard type weighs 450 pounds, is 15½ inches in diameter and 39 inches high. A vibration is set up by an interior tongue striking against the casing. The bell is normally operated

about 25 feet below the surface, although moderate variations from this will not affect its usefulness.

The receiving apparatus consists of a double set of microphones suspended in two small chambers—one located on either side below the water line and near the bow of the vessel. Each chamber is fastened directly to the steel outer shell of the boat. The chambers are filled with water and the microphones are suspended in the water from the top. In this way vibrations from the bell travel through the water to the steel side of the receiving vessel and then through the steel to the water in the chamber and then to the microphones. In this way, an almost complete water circuit from bell to microphone is established. An indicator box containing switches for connecting either set of microphones in either the port or starboard chamber is located convenient to the captain or person who is to receive signals. One of the features of the apparatus is the fact that through the use of this indicator box signals may be received alternately from the port and starboard sides of the vessel and from either one of the duplicate sets of microphones. If signals are consistently louder on the port side than on the starboard, assurance is given that the signaling station is on the port side of the boat and similarly

Great Lakes Submarine Signal Bell Stations

(Corrected to January, 1920)

Station	Type	Code	Lat. deg., min.	Long. deg., min.	General location	Lighthouse district
White Fish point.....	Electric	4	N. 46-47	W. 84-57	Lake Superior.....	11th
No. Manitou shoal No. 56.....	Lightship	2-2	N. 45-1	W. 85-57	Lake Michigan.....	12th
Eleven Foot shoal No. 60.....	Lightship	5-3	N. 45-38	W. 87-00	Green bay.....	12th
Lansing shoal No. 55.....	Lightship	3	N. 45-54	W. 85-34	Lake Michigan.....	12th
Gray's reef No. 57.....	Lightship	3	N. 45-47	W. 85-11	Lake Michigan.....	12th
Detour	Electric	2-2	N. 45-57	W. 83-54	Entrance to St. Mary's river.....	11th
Martin reef	Lightship	3	N. 45-54	W. 84-9	Lake Huron.....	11th
Poe reef No. 59.....	Lightship	5	N. 45-41	W. 84-21	Lake Huron.....	11th
Lake Huron No. 61.....	Lightship	5	N. 43-2	W. 82-25	Lake Huron.....	11th
Southeast shoal No. 18.....	Lightship	3	N. 41-49	W. 82-28	Point au Pelee Passage, Lake Erie	Canada

guidance and location on the high seas and of communication between vessels. One plan developed by the Submarine Signal Co. contemplates the sending out of a code radio message simultaneous with a distinctive bell signal. By this means, a captain on board a vessel within underwater sound range of the bell is able to determine his distance from the lightship or bell station. He does this by starting a stop watch at the instant he receives the radio message and then noting the elapsed time before the bell signal through the water reaches him. Stop watches which read directly in yards, determined by the speed of sound waves in water are provided so that the operation becomes a simple one. This of course only locates the ship on a circle of known radius, with the signal station as a center. However, by sailing in a definite direction for one mile and then again taking the distance, a triangle is determined which completely locates the vessel. The possibilities for communication and for directing vessels by means of the oscillator are numerous. Automatic guidance of vessels and location of icebergs through echoes are only a part of the plans which are now under consideration and being worked out.

The underwater bell signal together with its receiving apparatus is now in-

signals which sound louder on the starboard side indicate a station to the boat's starboard. Thus it is seen that by carefully steering the boat so as to keep signals as near equal as possible from both of its receiving chambers, it is possible to sail directly for the signaling station.

The following lake vessels are equipped with submarine signal receiving apparatus:

Vessel	Gross Tonnage
Donner Steamship Co.	
HERBERT F. BLACK.....	6315
M. A. Hanna & Co. (Johnstown Steamship Co.)	
E. Y. TOWNSEND.....	7438
MIDVALE.....	8271
Interlake Steamship Co.	
HENRY G. DALTON.....	7810
Herbert K. Oakes	
E. J. EARLING.....	6657
EMORY L. FORD.....	7986
Pickands, Mather & Co.	
D. O. MILLS.....	6598
Pittsburgh Steamship Co.	
D. G. KERR.....	7500
BAKER, GEORGE F.....	7210

BESSEMER, SIR HENRY.....	4321	MURPHY, SIMON J.....	4869
BLACK, CLARENCE A.....	4521	OLCOTT, WM. J.....	7568
BUFFINGTON, EUGENE J.....	7528	PALMER, WM. P.....	7602
BUNSEN, ROBERT W. E.....	5181	PERKINS, G. W.....	6406
COLE, T. F.....	7268	PHIPPS, HENRY.....	7240
CORALIA.....	4330	POE, GENERAL O. M.....	5619
COREY, W. E.....	6363	PRINCETON.....	5125
CORNELL.....	5082	QUEEN CITY.....	3979
CRAWFORD, GEORGE W.....	7971	REAM, NORMAN B.....	7053
CRESCENT CITY.....	4213	RENSSELAER.....	5124
DICKSON, W. B.....	7568	ROBERTS, PERCIVAL JR.....	7593
DINKEY, ALVA C.....	7514	ROGERS, H. H.....	7053
EADS, J. B.....	3746	SCHILLER, WM. B.....	7521
EDENBORN, WM.....	5910	SHAW, HOWARD L.....	4901
ELLWOOD, ISAAC L.....	5904	SIEMENS, SIR WM.....	4344
EMPIRE CITY.....	4118	STEPHENSON, GEORGE.....	4563
FAIRBAIRN, SIR WM.....	4219	SUPERIOR CITY.....	4795
FARRELL, JAMES A.....	7705	TRIMBLE, RICHARD.....	7607
FILBERT, WM. J.....	7962	WATT, JAMES.....	4090
FRICK, HENRY.....	6490	WIDENER, PETER A. B.....	7053
FULTON, ROBERT.....	4219	ZENITH CITY.....	3850
GARY, E. H.....	6331	COLLINS, E. C.....	4787
GATES, JOHN W.....	5946	SHIRAS MACGILVRAY.....	4500
HARVARD.....	5054	MCLEAN, J. R.....	4500
HILL, J. J.....	6025	PARGNY, E. W.....	7724
HOUGHTON, DOUGLAS.....	5332	CLEMSON, D. M.....	7728
HOUSE, FRANCIS E.....	7769	HOMER D. WILLIAMS.....	7742
LYNCH, THOMAS.....	7240	AUGUST ZEISING.....	8600
MALIBTOA.....	5229	PENTICOST MITCHELL.....	4655
MARICOPA.....	4223	WM. R. LINN.....	4000
MARIPOSA.....	2831	Shenango Steamship Co.	
MATAAFA.....	4840	W. P. SNYDER, JR.....	8603
MORGAN, J. P.....	7161	Standard Oil Co. of Indiana	
MORGAN, J. P. JR.....	7521	RENOWN.....	4153
A. F. HARVEY.....	4858	W. P. COWAN.....	5400
R. R. RICHARDSON.....	4644		
W. G. MCGONAGLE.....	7811		
MORSE, SAMUEL F. B.....	4936		

Expands Large British Shipyard

HARLAND & WOLFF, LTD., Belfast, Ireland, under the enterprising genius of Lord Pirrie, chairman of the company, prepared during the war to take an important part in peacetime shipbuilding. In Belfast, at Govan and other places on the Clyde, as well as at Greenock, they have large schemes in process of evolution to achieve this object.

Naturally, the largest undertaking is at Belfast where a large new shipyard, the biggest of the new yards started during the war, covering some 83 acres of ground has been built at Belfast, the company's plants cover 220 acres, 22,000 men being employed. The new yard has slipways capable of taking ships up to 1000 feet in length. The solid building berths, the tower cranes and other means of handling and distributing material on the slips, the big plating sheds with the latest equipment of tools and cranes, and the fitting out wharves in the channel adjacent to the yard, insure the rapid production of modern shipping tonnage.

The first launch from the new yard was a standard ship, being the forty-eighth standard vessel built by the firm. This vessel, the MAINE, 6500 tons, was launched on Nov. 27, 1919.

The new yard is situated on the east side of the Musgrave channel and the present scheme comprises six building berths. The following is a general description:

The bottom of the berths face toward the open sea so that they afford ample space for launching vessels of the largest type. Portable cofferdams are fitted at bottom of berths for the purpose of excluding the sea during the time vessels are being built. Between the berths reinforced concrete causeways are arranged, the inside of these are utilized to house the salt water and cofferdam pumps, hydraulic, pneumatic, fresh and salt water pipes and electric cables, while the tops of the causeways are utilized for roadways for bringing material to the several vessels. Along the causeways, 10-ton tower cranes are situated. These are capable of lifting and depositing material over the whole area of the building berths.

The platers' shed is situated at the head of the building berths, and is an all-steel building with glass roof, constructed on the cantilever girder system. It covers an area of about 7½ acres, being divided into eight bays, each of which is equipped with an overhead traveling crane, and the most modern and powerful machin-

ery, capable of dealing with plates 40 feet long and 1½ inches thick. Each bay is allotted its respective work as follows:

No. 1 bay, masts, columns, etc.; No. 2 bay, masts, liners and angle-smiths; No. 3 bay, decks, tanktops, etc.; No. 4 bay, shell and keels; No. 5 bay, bulkhead, casings and bunkers; No. 6 bay, beams, girders, etc.; No. 7 bay, frames and tank floors; No. 8 bay, frames. No. 2 bay is provided with a combined mast, plate and liner coke gas furnace and No. 8 bay with two large coke gas frame furnaces.

A stockyard for material is arranged at the south end of each bay, being fitted with brackets for sorting and racking material which is to be worked through the respective bays. The machinery is placed so that at each operation the material is advanced on its way to the vessel. A system of reinforced concrete roadways is arranged from each bay of the platers' shed to the general building berths. These adjoin the causeways and facilitate transportation.

A steel delivery wharf is being erected at the east side of the Musgrave channel, opposite the entrance to the stockyard as are also conveniently arranged fitting-out wharves. These wharves have been arranged in conjunction with the overhead ap-

pliances to reduce labor to a minimum.

A feature of the yard is the complete character of the electric power and lighting system. The electric current for providing power and lighting is supplied by large lead covered cables run underground from the generating station. The tower cranes on the slips, each of which is capable of handling a load of 10 tons at the point of cantilever, are electrically operated, and are arranged to be worked from the driver's cab and also from any convenient point on the ground level by means of a portable controller. In the plater's shed, an overhead, electrically driven traveling crane in No. 1 bay is capable of dealing with 15 tons, while in each of the other bays is installed a traveling crane capable of dealing with loads up to $7\frac{1}{2}$ tons. The amount of electrical power already installed for lighting alone is over 375 brake horsepower, while for power purposes the connected load is over 3000 brake horsepower. A number of large, electrically driven compressors are installed, each having an output of 4000 cubic feet of free air per minute. The pumping plant for supplying hydraulic power is also electrically driven, the motors being run automatically.

The lighting and power required for ships building and fitting out is supplied from two substations, each capable of housing four 120 brake horsepower motor generator sets, which transform the current to the suitable working pressure. From these substations are also controlled the outside lighting of the slips.

New Insurance Clause

Lloyd's underwriters and marine insurance companies in London, Liverpool and Manchester, England, have concluded an agreement, effective Jan. 1, respecting amendments to what are known as institute cargo clauses. In effect the changes are twofold. The ordinary marine insurance policy previously in force excluded the risk of frustration and it was thought advisable to insert a clause to the effect that the insurance is: "Warranted free of any claim based upon loss of, or frustration of, the insured voyage, or adventure caused by arrests, restraints or detentions of kings, princes or peoples."

In order to guard against the risk of the acceptance, unwittingly of liability without additional premium, for perils which may be excluded from the bill of lading by the shipping company, one of the clauses has been so amended

that the merchant will be "held covered at a premium to be arranged." The eventualities to which this arrangement are now to apply are: "In case of deviation or change of voyage, or other variation of the risk by reason of the exercise of any liberty granted to the shipowner or charterer under the contract of affreightment, or of any omission or error in the description of the interest vessel or voyage."

In other words, if the risks to the merchant are increased beyond those understood to be accepted when the proposal for insurance was submitted to the underwriter, the latter will still hold the merchant insured "at a premium to be arranged."

To Build 66 Ships

The Nippon Yusen Kaisha, Japan's largest shipping company, plans to devote the large reserves accumulated during the war to the construction of 613,120 tons of new shipping, thus increasing the tonnage of this line to over 1,000,000. Sixty-nine ships are to be built 36 for foreign trade aggregating 382,000 tons and 33 for coasting and China trade.

The cost is estimated at \$110,000,000 to be obtained from the company's reserve funds and the sale of a number of obsolete steamers. The new building program will be completed in 1925.

The Nippon Yusen Kaisha intends to challenge the Canadian Pacific's fast service across the Pacific (Vancouver to Yokohama). The Canadian Pacific at present does the crossing in nine days, three days faster than any other steamer. The new ships of the Japanese company will make the trip from Yokohama to a United States port in the same time.

The Japanese government is also considering the information brought back by officials who were sent to Europe and America several months ago to study shipping prospects. The result of the inquiry is expected to be a new shipping subsidy bid which will give government assistance to the new lines that were opened during the war. The effect will be to place subsidized tonnage on many routes where it has not hitherto been seen.

World's Fastest Warship

On the recent trial of H. M. S. TYRIAN, a torpedo boat destroyer designed and built by Yarrow & Co., Ltd., Glasgow, Scotland, a speed of over 45 miles an hour was obtained. This is approximately 40 knots. The record was made on an admiralty 4-

hour official course in deep water. Yarrow & Co. point out that this is the highest official speed yet to be attained by any warship in the world and that it is the result of a large amount of research and experimental work carried out by the company. If the trial had been run in shallow water, a higher speed could have been obtained.

The TYRIAN is the last of a series of 29 destroyers built by the company since the beginning of the war. She is 273 feet long and has a fully loaded displacement of 1060 tons. She is fitted with turbine engines, steam be-supplied by oil burning watertube boilers and superheaters of the company's design.

May Buy Big Crane

The Mersey docks and harbor board, Liverpool, England, may purchase a mammoth floating crane. Its engineer at a recent meeting explained that the new vessel was originally built for the Russian admiralty, which, of course, could not take delivery. The vessel is self-propelled, with a speed sufficient for the traffic on the Mersey, and is capable of dealing with loads up to 200 tons. In addition, it is fitted with two quick-speed lifting gears, which enable the vessel to deal rapidly with weights up to 60 tons. It is a large vessel, being 160 feet in length, with a beam of nearly 90 feet. The crane has a range of 360 degrees. The crane is electrically driven and was built in such a manner that practically any reasonable lifting speed can be obtained.

Japanese Ships Arrive

For delivery to the Emergency Fleet corporation, several Japanese built steel steamers are arriving at north Pacific ports. These vessels are coming in as coal burners but they are being changed to oil burners at Seattle. Each vessel requires considerable work before being in condition for delivery and each represents a contract of some size. The Todd Dry Docks, Inc., were awarded the contract for overhauling, altering and placing in condition the steamer EASTERN GUIDE following her arrival from Japan. This vessel is to be operated on the Puget Sound-Hawaiian route upon delivery. Repairs will take about 30 days and will involve an expenditure of about \$100,000.

During 1919, British Columbia shipyards turned out 10 steel vessels and 46 wooden ships with a total tonnage of 170,000. There are 65,600 tons still under contract and on the ways un-launched at dominion yards.

1919 Construction Record of U.S. Yards

This complete tabulation shows all vessels delivered, launched or on the ways for the Emergency Fleet corporation. The record is built up from reports filed with the corporation late in 1919.

North Atlantic District Steel

Atlantic Corporation, Portsmouth, N. H.

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shift or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
987	Kisnop	8,800	Cont.	Cargo	1-18-19	8-7-19	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
988	Babboosc	8,800	Cont.	Cargo	5-3-19	9-19-19	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
989	Portsmouth	8,800	Cont.	Cargo	7-4-19	11-4-19	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
990	Nipmuc	8,800	Cont.	Cargo	10-28-19	1-20	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
991	Norumbega	8,800	Cont.	Cargo	12-24-19	2-20	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
992	Brookline	8,800	Cont.	Cargo	4-20	6-20	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
993	Springfield	8,800	Cont.	Cargo	6-20	9-20	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
994	Tolosa	8,800	Cont.	Cargo	9-20	12-20	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
995	Pachet	8,800	Cont.	Cargo	11-20	1-21	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2
996	Pagasset	8,800	Cont.	Cargo	12-20	2-21	10.50	2800 I	....	410-5½ x 54-0 x 29-9	24-2

Bethlehem Shipbuilding Corp., Ltd. (Fore River Plant), Quincy, Mass.

1166	Watertown	9,100	Cont.	Tanker	6-22-19	7-16-19	10.50	2700 I	....	415-0 x 56-0 x 32-9	25-6
1167	Baldbutte	9,100	Cont.	Tanker	7-27-19	8-13-19	10.50	2700 I	....	415-0 x 56-0 x 32-9	25-6
1168	Baldhill	9,100	Cont.	Tanker	9-7-19	9-19-19	10.50	2700 I	....	415-0 x 56-0 x 32-9	25-6
1670	Hadnot	9,100	Cont.	Tanker	10-21-19	10-24-19	10.50	2700 I	....	415-0 x 56-0 x 32-9	25-6
1671	Hagan	9,100	Cont.	Tanker	11-6-19	11-28-19	10.50	2700 I	....	415-0 x 56-0 x 32-9	25-6
1672	Trimountain	9,100	Cont.	Tanker	12-10-19	12-19	10.50	2700 I	....	415-0 x 56-0 x 32-9	25-6
297	Lewis Luckenbach	14,000	Req.	Cargo	3-30-19	5-8-19	13.00	....	Oil	495-0 x 68-0 x 40-0	28-8
298	Andrea F. Luckenbach	14,000	Req.	Cargo	5-3-19	6-12-19	13.00	....	Oil	495-0 x 68-0 x 40-0	28-8

Bethlehem Shipbuilding Corp. (Moore Plant), Elizabeth, N. J.

1169	Baldrige	....	Cont.	O.G. Tugs	11-20-18	2-10-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1170	Baldrach	....	Cont.	O.G. Tugs	11-20-18	2-28-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1171	Clincho	....	Cont.	O.G. Tugs	12-31-18	4-10-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1172	Bailcamp	....	Cont.	O.G. Tugs	12-31-18	4-2-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1173	Ballenias	....	Cont.	O.G. Tugs	1-31-19	6-2-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1174	Ballew	....	Cont.	O.G. Tugs	1-31-19	6-2-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1313	Barkhamstead	....	Cont.	O.G. Tugs	3-5-19	6-7-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1314	Barlow	....	Cont.	O.G. Tugs	3-5-19	6-13-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1315	Barrallton	....	Cont.	O.G. Tugs	3-30-19	6-18-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1316	Barranca	....	Cont.	O.G. Tugs	3-30-19	6-30-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1317	Barrenfork	....	Cont.	O.G. Tugs	4-29-19	7-8-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1318	Barryton	....	Cont.	O.G. Tugs	4-29-19	7-14-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1319	Butterfield	....	Cont.	O.G. Tugs	5-21-19	7-30-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1320	Buttercup	....	Cont.	O.G. Tugs	5-21-19	8-8-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1321	Barstow	....	Cont.	O.G. Tugs	6-30-19	9-5-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1322	Bartheny	....	Cont.	O.G. Tugs	6-30-19	9-13-19	....	800 I	Coal	141-3½ x 27-6 x 16-8	15-0
1323	Bartolome	....	Cont.	O.G. Tugs	8-6-19	10-14-19	....	800 I	Oil	141-3½ x 27-6 x 16-8	15-0
1324	Barwick	....	Cont.	O.G. Tugs	8-6-19	10-29-19	....	800 I	Oil	141-3½ x 27-6 x 16-8	15-0
1325	Basobel	....	Cont.	O.G. Tugs	8-30-19	11-10-19	....	800 I	Oil	141-3½ x 27-6 x 16-8	15-0
1326	Basford	....	Cont.	O.G. Tugs	8-30-19	11-16-19	....	800 I	Oil	141-3½ x 27-6 x 16-8	15-0
1980	Manquilt	5,100	Cont.	Cargo	3-20	5-20	11.00	2400 I	Coal	328-6 x 46-0 x 25-6	21-2
1981	Nanshon	5,100	Cont.	Cargo	3-20	5-20	11.00	2400 I	Coal	328-6 x 46-0 x 25-6	21-2
115	Plainfield	3,500	Req.	Cargo	4-17-18	9-11-18	11.25	1500 I	Coal	300-0 x 45-0 x 25-3	19-0
116	Garfield	3,500	Req.	Cargo	7-4-18	10-31-18	11.25	1500 I	Coal	300-0 x 45-0 x 25-3	19-0
117	Kewanee	4,800	Req.	Tanker	6-7-19	8-25-19	11.25	1400 I	Oil	318-0 x 46-0 x 26-0	22-0

Downey Shipbuilding Corp., Staten Island, N. Y.

216	Abron	7,500	Cont.	Cargo	7-27-18	12-27-18	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
217	Osakis	7,500	Cont.	Cargo	9-7-18	5-8-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
218	Dio	7,500	Cont.	Cargo	11-9-18	5-9-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
219	Sabotawan	7,500	Cont.	Cargo	2-8-19	6-13-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
220	Dochet	7,500	Cont.	Cargo	3-9-19	7-9-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
221	Strathnaver	7,500	Cont.	Cargo	3-27-19	7-18-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
222	New Britain	7,500	Cont.	Cargo	5-24-19	8-1-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
223	Richmond Boro	7,500	Cont.	Cargo	6-12-19	8-27-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
224	Yaphank	7,500	Cont.	Cargo	7-10-19	9-25-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½
225	Waterbury	7,500	Cont.	Cargo	7-23-19	11-29-19	10.50	3000 I	Oil	381-0 x 52-0 x 30-0	23-8½

Groton Iron Works, Groton, Conn.

372	Tollard	8,800	Cont.	Cargo	11-9-18	4-24-19	10.50	2500 S	Oil	410-0 x 54-0 x 29-9	24-2
373	Nameaug	8,800	Cont.	Cargo	7-8-19	8-23-19	10.50	2500 S	Oil	410-0 x 54-0 x 29-9	24-2
374	Worcester	8,800	Cont.	Cargo	4-5-19	6-20-19	10.50	2500 S	Oil	410-0 x 54-0 x 29-9	24-2
375	Quinnipiack	8,800	Cont.	Cargo	11-1-19	11-28-19	10.50	2500 S	Oil	410-0 x 54-0 x 29-9	24-2
376	Merry-Mount	8,800	Cont.	Cargo	9-20-19	10-18-19	10.50	2500 S	Oil	410-0 x 54-0 x 29-9	24-2
377	Hartford	8,800	Cont.	Cargo	11-22-19	12-19	10.50	2500 S	Oil	410-0 x 54-0 x 29-9	24-2
1542	Honnedaga	9,400	Cont.	Cargo	1-20	3-20	11.00	2800 S	Coal	402-6 x 53-0 x 34-6	26-4¾
1543	Provincetown	9,400	Cont.	Cargo	2-20	4-20	11.00	2800 S	Coal	402-6 x 53-0 x 34-6	26-4¾
1544	Hopatcong	9,400	Cont.	Cargo	3-20	5-20	11.00	2800 S	Coal	402-6 x 53-0 x 34-6	26-4¾
1545	Horeb	9,400	Cont.	Cargo	....	....	11.00	2800 S	Coal	402-6 x 53-0 x 34-6	26-4¾
1546	Hosmer	9,400	Cont.	Cargo	....	....	11.00	2800 S	Coal	402-6 x 53-0 x 34-6	26-4¾
1547	Houlka	9,400	Cont.	Cargo	....	....	11.00	2800 S	Coal	402-6 x 53-0 x 34-6	26-4¾

1919 Construction Record of U.S. Yards

Newburgh Shipyards, Inc., Newburgh, N. Y.

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date	Date	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars.			Draft ft. in.
					launched actual or estimated	delivered actual or estimated				Beam molded, feet, inches	Depth molded, inches		
759	Newburgh	9,000	Cont.	Cargo	9- 2-18	12-31-18	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
760	New Windsor	9,000	Cont.	Cargo	10-19-18	4- 4-19	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
761	Poughkeepsie	9,000	Cont.	Cargo	12-21-18	5- 6-19	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
762	Walden	9,000	Cont.	Cargo	2- 1-19	7-29-19	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
1365	Gold Spring	9,000	Cont.	Cargo	4-22-19	9-20-19	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
1366	Firthcliffe	9,000	Cont.	Cargo	5-25-19	10-14-19	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
1367	Irvington	9,000	Cont.	Cargo	7-13-19	11-18-19	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
1368	Peekskill	9,000	Cont.	Cargo	8-30-19	12-19	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
1369	Monroe	9,000	Cont.	Cargo	10-19-19	2-20	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
1370	Fishkill	9,000	Cont.	Cargo	12-19	5-20	10.50	3000 S	Coal & Oil	401-0	x 54-0	x 32-9	25-6
2833	Half Moon	9,000	Cont.	Cargo	1-20	6-20	11.00	2800 S	Oil & Coal	401-0	x 54-0	x 32-9	....
2834	Storm King	9,000	Cont.	Cargo	3-20	8-20	11.00	2800 S	Oil & Coal	401-0	x 54-0	x 32-9	....

Federal Shipbuilding Co., Kearny, N. J.

958	Mercer	9,600	Cont.	Cargo	10-12-18	1-16-19	11.00	2500 S	Oil	395-6	x 55-0 x 34-11	27-0
959	Marne	9,600	Cont.	Cargo	10-12-18	2-3-19	11.00	2500 S	Coal & Oil	395-6	x 55-0 x 34-11	27-0
960	The Lambs	9,600	Cont.	Cargo	11-24-18	2-21-19	11.00	2500 S	Oil	395-6	x 55-0 x 34-11	27-0
961	Homestead	9,600	Cont.	Cargo	12-22-18	3-26-19	11.00	2500 S	Coal & Oil	395-6	x 55-0 x 34-11	27-0
962	Duquesne	9,600	Cont.	Cargo	2-2-19	3-3-19	11.00	2500 S	Coal & Oil	395-6	x 55-0 x 34-11	27-0
963	McKeesport	9,600	Cont.	Cargo	3-9-19	4-11-19	11.00	2500 S	Coal & Oil	395-6	x 55-0 x 34-11	27-0
964	Braddock	9,600	Cont.	Cargo	12-22-18	4-2-19	11.00	2500 S	Oil	395-6	x 55-0 x 34-11	27-0
1422	Donora	9,600	Cont.	Cargo	3-31-19	5-14-19	11.00	2500 S	Oil	395-6	x 55-0 x 34-11	27-0
1423	Lorain	9,600	Cont.	Cargo	4-17-19	5-23-19	11.00	2500 S	Oil	395-6	x 55-0 x 34-11	27-0
1424	Waukigon	9,600	Cont.	Cargo	3-31-19	5-14-19	11.00	2500 S	Oil	395-6	x 55-0 x 34-11	27-0
1425	Youngstown	9,600	Cont.	Cargo	4-26-19	5-29-19	11.00	2500 S	Oil	395-6	x 55-0 x 34-11	27-0
1426	Ambridge	9,600	Cont.	Cargo	5-24-19	6-27-19	11.00	2500 S	Coal	395-6	x 55-0 x 34-11	27-0
1427	Clairton	9,600	Cont.	Cargo	5-29-19	7-11-19	11.00	2500 S	Coal	395-6	x 55-0 x 34-11	27-0
1428	Innoko	9,600	Cont.	Cargo	7-11-19	8-15-19	11.00	2500 S	Coal	395-6	x 55-0 x 34-11	27-0
1429	Wytherville	9,600	Cont.	Cargo	7-30-19	8-30-19	11.00	2500 S	Coal	395-6	x 55-0 x 34-11	27-0
1430	Bellfort	9,600	Cont.	Cargo	5-24-19	7-29-19	11.00	2800 S	Oil	395-6	x 55-0 x 34-11	27-0
1431	Westmoreland	9,600	Cont.	Cargo	6-14-19	8-12-19	11.00	2800 S	Oil	395-6	x 55-0 x 34-11	27-0
1432	Bellbuckle	9,600	Cont.	Cargo	7-11-19	8-27-19	11.00	2800 S	Oil	395-6	x 55-0 x 34-11	27-0
1433	Vincent	9,600	Cont.	Cargo	8-16-19	9-20-19	11.00	2800 S	Oil	395-6	x 55-0 x 34-11	27-0
1434	Bellhaven	9,600	Cont.	Cargo	9-13-19	11-12-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0
1435	Winona County	9,600	Cont.	Cargo	8-16-19	9-20-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0
1436	Belleplaine	9,600	Cont.	Cargo	10-11-19	11-17-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0
1437	Anacanda	9,600	Cont.	Cargo	9-6-19	10-24-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0
1438	Bellerose	9,600	Cont.	Cargo	10-11-19	11-13-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0
1439	Kearny	9,600	Cont.	Cargo	11-15-19	12-1-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0
1440	Bellflower	9,600	Cont.	Cargo	11-1-19	12-5-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0
1441	Bellemina	9,600	Cont.	Cargo	9-13-19	10-3-19	11.00	2800 S	Coal	395-6	x 55-0 x 34-11	27-0

Bayles Shipyards, Inc., Port Jefferson, N. Y.

773	Osiris	5,000	Cont.	Cargo	5-31-19	2-20	10.50	1600 I	Coal & Oil	374-0	x 46-0 x 28-6	22-6
774	Cloverock	5,000	Cont.	Cargo	8-23-19	1-20	10.50	1600 I	Coal & Oil	374-0	x 46-0 x 28-6	22-6
775	Conimicut	5,000	Cont.	Cargo	1-20	5-20	10.50	1600 I	Coal & Oil	374-0	x 46-0 x 28-6	22-6
1390	Basswood	.....	Cont.	O. G. Tug	4-5-19	12-1-19	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1391	Bastrop	.....	Cont.	O. G. Tug	5-31-19	12-15-19	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0

Standard Shipbuilding Corp., Shooters Island, Richmond Borough, N. Y.

1288	Balsam	7,433	Cont.	Cargo	3-9-19	6-19-19	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1289	Eastside	7,433	Cont.	Cargo	4-5-19	7-28-19	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1290	Glen Ridge	7,433	Cont.	Cargo	4-20-19	9-11-19	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1291	Bannack	7,433	Cont.	Cargo	5-24-19	10-3-19	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1292	Rockaway Park	7,433	Cont.	Cargo	7-19-19	11-12-19	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1293	Palisades	7,433	Cont.	Cargo	8-30-19	12-10-19	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1294	Tenafly	7,433	Cont.	Cargo	11-15-19	2-20	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1295	Kerhonkson	7,433	Cont.	Cargo	12-4-19	3-20	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1296	Hinkley	7,433	Cont.	Cargo	12-15-19	3-20	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
1297	Chappaqua	7,433	Cont.	Cargo	1-20	4-20	10.50	2400 I	Coal & Oil	377-0	x 52-0 x 29-0	23-6
	Dallas	7,300	Req.	Cargo	9-28-18	1-10-19	10.50	2500 I	Coal	377-0	x 52-0 x 29-0	23-8
	Belvidere	7,300	Req.	Cargo	10-26-18	3-12-19	10.50	2500 I	Coal	377-0	x 52-0 x 29-0	23-8
	Aledo	7,300	Req.	Cargo	11-23-18	4-3-19	10.50	2500 I	Coal	377-0	x 52-0 x 29-0	23-8
	Shooter's Island	7,300	Req.	Cargo	1-21-19	5-5-19	10.50	2500 I	Coal	377-0	x 52-0 x 29-0	23-8

Providence Engineering Works, Providence, R. I.

1345	Bathalum	.....	.....	Tug	2-15-19	8-5-19	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1346	Bathgate	.....	.....	Tug	4-5-19	9-11-19	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1347	Battleboro	.....	.....	Tug	5-10-19	9-23-19	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1348	Baymead	.....	.....	Tug	8-7-19	11-10-19	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1349	Tagus	.....	.....	Tug	7-3-19	10-8-19	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1350	Baddacock	.....	.....	Tug	.....	.....	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1351	Bayport	.....	.....	Tug	.....	.....	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1352	Bayside	.....	.....	Tug	.....	.....	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1353	Bayspring	.....	.....	Tug	.....	.....	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0
1354	Beachhaven	.....	.....	Tug	.....	.....	.....	800 I	.....	141-3 1/2	x 27-6 x 16-8	15-0

Texas Steamship Corp., Bath, Me.

1	Maine	9,530	Req.	Cargo	5-24-17	10-9-17	11.00	.....	Oil	402-0	x 54-0 x 33-9	....
2	Woonsocket	9,530	Req.	Cargo	7-15-17	12-1-17	11.00	.....	Oil	402-0	x 54-0 x 33-9	....
10	Dirigo	9,500	Req.	Tanker	11-9-18	2-21-19	11.00	.....	Oil	415-0	x 56-0 x 32-9	....
11	Shenandoah	9,500	Req.	Tanker	3-29-18	6-14-19	11.00	.....	Oil	415-0	x 56-0 x 32-9	....
12	Lightburne	9,500	Req.	Tanker	7-19-19	8-30-19	11.00	.....	Oil	415-0	x 56-0 x 32-9	....
13	Aryan	9,500	Req.	Tanker	10-11-19	11-10-19	.....	.....	Oil	415-0	x 56-0 x 32-9	....
14	Solitaire	4,100	Req.	Tanker	7-20	10-20	.....	.....	Oil	315-0	x 43-6 x 27-6	....
21	Roanoke	9,800	Req.	Tanker	12-19	2-20	.....	.....	Oil	415-0	x 56-0 x 32-9	....
22	Occidental	9,800	Req.	Tanker	1-20	3-20	.....	.....	Oil	415-0	x 56-0 x 32-9	....
23	Harvester	9,800	Req.	Tanker	10-20	1-21	.....	.....	Oil	415-0	x 56-0 x 32-9	....
24	Reaper	9,800	Req.	Tanker	11-20	2-21	.....	.....	Oil	415-0	x 56-0 x 32-9	....

Staten Island Shipbuilding Co., Mariners Harbor, N. Y.

695	York Harbor	3,500	Req.	Cargo	3-18-19	6-17-19	9.50	1200 I	Coal	264-0	x 42-0 x 24-0	20-9
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1919 Construction Record of U.S. Yards

Delaware River District

Steel

Sun Shipbuilding Co., Chester, Pa.

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
246	Hanover	10,000	Cont.	Cargo	8-30-19	10-24-19	10.75	3000 I	Coal & Oil	435-0 x 57-6 x 38-0	....
247	Chester Valley	10,000	Cont.	Cargo	12-10-19	2-20	10.75	3000 I	Coal & Oil	435-0 x 57-6 x 38-0	....
248	Conshohocken	10,000	Cont.	Cargo	4-20	5-20	10.75	3000 I	Coal & Oil	435-0 x 57-6 x 38-0	....
249	District of Columbia	10,000	Cont.	Cargo	3-20	5-20	10.75	3000 I	Coal & Oil	435-0 x 57-6 x 38-0	....
5	South Bend	12,500	Req.	Cargo	10-29-18	3-7-19	13.50	5000 I	Oil	449-10 x 60-0 x 40-11	....
6	Marica	12,500	Req.	Troop	11-30-18	5-21-19	13.50	5000 I	Oil	449-10 x 60-0 x 40-11	....
9	Edelijn	12,500	Req.	Troop	1-4-19	7-18-19	13.50	2500 I	Oil	449-10 x 60-0 x 40-11	....
10	Sol Navis	12,500	Req.	Troop	2-14-19	7-7-19	13.50	2500 I	Oil	449-0 x 60-0 x 40-11	....
13	S. B. Hunt	10,500	Req.	Tanker	6-14-19	8-13-19	10.50	2500 I	Oil	430-0 x 59-0 x 33-3	....
14	G. H. Jones	10,500	Req.	Tanker	7-12-19	9-5-19	10.50	2500 I	Oil	430-0 x 59-0 x 33-3	....
17	Sunbeam	10,500	Req.	Tanker	8-16-19	10-7-19	10.50	2500 I	Oil	430-0 x 59-0 x 33-3	....
18	Sunshine	10,500	Req.	Tanker	10-4-19	11-15-19	10.50	2500 I	Oil	430-0 x 59-0 x 33-3	....

New York Shipbuilding Corp., Camden, N. J.

1012	Wenatchee	13,000	Cont. Pass., cargo	5-24-19	3-20	17.50	12,000 S	Oil	518-0 x 72-0 x 50-0	....
1013	Sea Girt	13,000	Cont. Pass., cargo	7-20-19	4-20	17.50	12,000 S	Oil	518-0 x 72-0 x 50-0	....
1014	American Legion	13,000	Cont. Pass., cargo	10-11-19	5-20	17.50	12,000 S	Oil	518-0 x 72-0 x 50-0	....
2583	Woodbury	13,000	Cont. Pass., cargo	....	....	15.00	7000 S	Oil	502-0 62-0 42-0	....
2586	Iassus	13,000	Cont. Pass., cargo	....	....	15.00	7000 S	Oil	502-0 62-0 42-0	....
2587	Jadwin	13,000	Cont. Pass., cargo	....	....	15.00	7000 S	Oil	502-0 62-0 42-0	....
2588	Icavia	13,000	Cont. Pass., cargo	....	....	15.00	7000 S	Oil	502-0 62-0 42-0	....
2589	Jakin	13,000	Cont. Pass., cargo	....	....	15.00	7000 S	Oil	502-0 62-0 42-0	....
2590	Idas	13,000	Cont. Pass., cargo	....	....	15.00	7000 S	Oil	502-0 62-0 42-0	....
2591	Idman	13,000	Cont. Pass., cargo	....	....	15.00	7000 S	Oil	502-0 62-0 42-0	....
2593	Janiculum	13,000	Cont. Pass., cargo	....	....	17.00	12,000 S	Oil	518-0 x 72-0 x 50-0	....
2594	Isleta	13,000	Cont. Pass., cargo	....	....	17.00	12,000 S	Oil	518-0 x 72-0 x 50-0	....
2599	Hypatia	13,000	Cont. Pass., cargo	....	....	17.00	12,000 S	Oil	518-0 x 72-0 x 50-0	....
2580	Hyperia	13,000	Cont. Pass., cargo	....	....	17.00	12,000 S	Oil	518-0 x 72-0 x 50-0	....
2581	Hypsa	13,000	Cont. Pass., cargo	....	....	17.00	12,000 S	Oil	518-0 x 72-0 x 50-0	....
2582	Hyrcaia	13,000	Cont. Pass., cargo	....	....	17.00	12,000 S	Oil	518-0 x 72-0 x 50-0	....
2601	Scottsbury	11,925	Cont. Cargo	9-20-19	....	10.50	2800 S	Oil or Coal	419-3 x 56-3 x 33-4	....
196	Gulf Queen	8,620	Req. Tanker	2-27-19	4-18-19	11.50	3000 I	Oil or Coal	419-3 x 56-3 x 33-4	....
197	Santa Elisa	5,325	Req. Troop	9-24-18	6-16-19	13.50	2900 I	Oil or Coal	360-0 x 51-9 x 33-6	....
198	Santa Leonora	5,325	Req. Troop	12-19-18	7-7-19	13.50	2900 I	Oil or Coal	360-0 x 51-9 x 33-6	....
202	Champion	11,925	Req. Cargo	7-15-19	9-30-19	11.50	3900 I	Oil or Coal	419-3 x 56-3 x 33-4	....
203	Defender	11,925	Req. Cargo	8-14-19	11-3-19	11.50	3900 I	Oil or Coal	419-3 x 56-3 x 33-4	....

Bethlehem Shipbuilding Corp., Ltd. (Harlan Plant), Wilmington, Del.

1139	Cabrille	7,500	Cont. Tanker	12-21-18	7-8-19	11.00	2500 I	Coal	392-0 x 51-0 x 30-2	....
1140	Romulus	7,500	Cont. Tanker	4-5-19	7-30-19	11.00	2500 I	Coal	392-0 x 51-0 x 30-2	....
1141	Salem County	7,500	Cont. Tanker	8-30-19	10-11-19	11.00	2500 I	Coal	392-0 x 51-0 x 30-2	....
1142	Benwood	7,400	Cont. Cargo	7-20	9-20	11.00	2500 I	Oil	377-0 x 52-0 x 29-6	....
1143	Berclair	7,400	Cont. Cargo	6-20	8-20	11.00	2500 I	Oil	377-0 x 52-0 x 29-6	....
1144	Bergamot	7,400	Cont. Cargo	9-20	10-20	11.00	2500 I	Oil	377-0 x 52-0 x 29-6	....
1975	Delco	5,100	Cont. Cargo	7-23-19	9-22-19	11.00	2400 I	Coal	328-6 x 46-0 x 25-6	....
1976	Bethnor	5,100	Cont. Cargo	9-27-19	12-19	11.00	2400 I	Coal	328-6 x 46-0 x 25-6	....
1977	Macomet	5,100	Cont. Cargo	12-10-19	2-20	11.00	2400 I	Coal	328-6 x 46-0 x 25-6	....
1978	Mason City	5,100	Cont. Cargo	2-20	4-20	11.00	2400 I	Coal	328-6 x 46-0 x 25-6	....
1979	Maddequet	5,100	Cont. Cargo	3-20	5-20	11.00	2400 I	Coal	328-6 x 46-0 x 25-6	....
1982	Liberty-Minquas	7,500	Cont. Tanker	12-20-19	....	11.00	2600 I	Oil	392-0 x 51-0 x 30-2	....
1983	Kehuku	7,500	Cont. Tanker	12-25-19	....	11.00	2600 I	Oil	392-0 x 51-0 x 30-2	....
1984	Kakoske	7,500	Cont. Tanker	3-20	....	11.00	2600 I	Oil	392-0 x 51-0 x 30-2	....
458	Norma	3,500	Req. Cargo	11-14-18	12-31-18	11.25	1600 I	Coal	300-0 x 45-0 x 25-3	....

William Cramp & Sons Ship & Engine Building Co., Philadelphia

1850	Alameda	10,000	Cont. Navy tanker	7-15-19	10-17-19	11.00	3000 I	Oil	430-0 x 58-0 x 33-4	25-8
1851	Kaweah	10,000	Cont. Navy tanker	8-14-19	....	11.00	3000 I	Oil	430-0 x 58-0 x 33-4	25-8
1862	Laramie	10,000	Cont. Navy tanker	....	....	11.00	3000 I	Oil	420-0 x 58-0 x 33-4	25-8
1853	Mattole	10,000	Cont. Navy tanker	....	....	11.00	3000 I	Oil	430-0 x 58-0 x 33-4	25-8
445	Charles H. Cramp	9,400	Req. Pass., ft.	7-20	8-20	12.00	3000 I	Oil or Coal	404-6 x 54-0 x 36-9½	....
447	Santa Malta	9,500	Req. Troop	12-4-18	5-16-19	12.00	3000 I	Oil or Coal	404-6 x 54-0 x 36-9½	....
456	Henry S. Grove	9,400	Req. Pass., ft.	9-20	11-20	12.00	3000 I	Oil or Coal	404-6 x 54-0 x 36-9½	....

Merchant Shipbuilding Corp. (Chester Yard), Chester, Pa.

344	Silverbrook	9,000	Req. Tanker	2-18-19	7-18-19	10.50	2500 S	Oil or Coal	401-0 x 54-0 x 32-9	....
345	Burnwell	9,000	Req. Tanker	4-30-19	7-18-17	10.50	2500 S	Oil or Coal	401-0 x 54-0 x 32-9	....
346	Auburn	8,970	Req. Cargo	9-25-18	12-31-18	10.50	2500 S	Coal	401-0 x 54-0 x 32-9	....
347	Myrtle	8,970	Req. Cargo	1-16-19	4-17-19	11.00	2500 S	Oil or Coal	401-0 x 54-0 x 32-9	....
348	Ipswich	8,970	Req. Cargo	4-25-19	7-8-19	11.00	2500 S	Oil or Coal	401-0 x 54-0 x 32-9	....
349	Iceland	9,000	Req. Cargo	7-29-19	11-3-19	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
351	Summer Leaf	8,970	Req. Cargo	....	3-20	10.90	2500 S	Oil or Coal	401-0 x 54-0 x 32-9	....
352	Lock Port	8,970	Req. Cargo	5-24-19	9-27-19	10.00	2500 S	Oil or Coal	401-0 x 54-0 x 32-9	....
353	Terre Haute	8,970	Req. Cargo	8-22-19	11-22-19	10.00	2500 S	Oil or Coal	401-0 x 54-0 x 32-9	....
356	Tevarkana	9,000	Req. Cargo	6-27-19	10-14-19	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
357	Lansdowne	9,000	Req. Cargo	9-24-19	12-15-19	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
358	John Roach	9,000	Req. Cargo	10-28-19	12-19	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
359	Amross	9,000	Req. Cargo	12-15-19	2-20	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
360	Wm. Henry Webb	9,000	Req. Cargo	1-20	3-20	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
361	Donald McKay	9,000	Req. Cargo	2-20	4-20	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
362	Greenland	9,000	Req. Cargo	3-20	5-20	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
363	Henry Steers	9,000	Req. Cargo	4-20	6-20	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....
365	Loretta	9,000	Req. Cargo	5-20	7-20	11.00	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	....

1919 Construction Record of U.S. Yards

Merchant Shipbuilding Corp., (Chester Yard), Chester, Pa. (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P. shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
366	Winter	9,000	Req.	Cargo	8-20	10-12	11.00	3000 S	Oil or Coal	401-0	x 54-0 x 32-9
367	John Englis	9,000	Req.	Cargo	7-20	9-20	11.00	3000 S	Oil or Coal	401-0	x 54-0 x 32-9
368	John Stevens	9,000	Req.	Cargo	8-20	10-20	11.00	3000 S	Oil or Coal	401-0	x 54-0 x 32-9
369	George E. Weed	9,000	Req.	Cargo	8-20	11-20	11.00	3000 S	Oil or Coal	401-0	x 54-0 x 32-9
370	George Pierce	9,000	Req.	Cargo	10-20	12-20	11.00	3000 S	Oil or Coal	401-0	x 54-0 x 32-9

Pusey Jones, Wilmington, Del.

New Jersey Yard, Gloucester, N. J.

201	Castlepoint	5,000	Req.	Cargo	9-15-18	2-18-19	10.00	1650 I	Coal	321-9	x 49-10 x 24-9
202	Castlewood	5,000	Req.	Cargo	11-16-18	3-26-19	10.00	1650 I	Coal	.....	.....
203	Castletown	5,000	Req.	Cargo	2-15-19	6-9-19	10.00	1650 I	Coal	.....	.....

Pennsylvania Yard, Gloucester, N. J.

8	Henry Clay	12,500	Req.	Cargo	11-18-18	5-14-19	11.00	3000 S	Coal	439-6	x 60-0 x 36-8
9	Abraham Lincoln	12,500	Req.	Cargo	5-10-19	9-26-19	11.90	3000 S	Coal	439-6	x 60-0 x 36-8
10	Andrew Jackson	12,500	Req.	Cargo	10-4-19	12-5-19	11.00	3000 S	Coal	439-6	x 60-0 x 36-8
11	Daniel Webster	12,500	Req.	Cargo	8-23-19	11-3-19	11.00	3000 S	Coal	439-6	x 60-0 x 36-8
12	John Adams	12,500	Req.	Cargo	11-24-19	1-20	11.00	2000 S	Coal	439-6	x 60-0 x 36-8
15	Ethan Allan	12,500	Req.	Cargo	6-20	9-20	11.00	3000 S	Coal	439-6	x 60-0 x 36-8
16	Patrick Henry	12,500	Req.	Cargo	6-20	9-20	11.00	3000 S	Coal	439-6	x 60-0 x 36-8

Wilmington Yard, Wilmington, Del.

1006	Marshall	4,000	Req.	Cargo	10-5-18	2-6-19	10.00	1440 S	Coal	300-0	x 44-0 x 22-3
1007	Moline	4,350	Req.	Cargo	12-9-18	5-24-19	10.50	1650 I	Coal	300-0	x 44-0 x 25-0
1008	Rock Island	4,350	Req.	Cargo	2-15-19	7-16-19	10.50	1650 I	Coal	300-0	x 44-0 x 25-0
1009	Knights Island	4,350	Req.	Cargo	5-12-19	8-29-19	10.50	1650 I	Coal	300-0	x 44-0 x 25-0
1010	Fire Island	4,350	Req.	Cargo	6-18-19	10-10-19	10.50	1650 I	Coal	300-0	x 44-0 x 25-0
1011	Long Island	4,350	Req.	Cargo	9-20-19	12-6-19	10.50	1650 I	Coal	300-0	x 44-0 x 25-0
1012	Staten Island	4,350	Req.	Cargo	11-6-19	2-20	10.50	1650 I	Coal	300-0	x 44-0 x 25-0
1013	Fishers Island	4,350	Req.	Cargo	.....	2-20	10.50	1650 I	Coal	300-0	x 44-0 x 25-0
1014	Shelter Island	4,350	Req.	Cargo	.....	4-20	10.50	1650 I	Coal	300-0	x 44-0 x 25-0

Submarine Boat Corp. District

Submarine Boat Corp., Newark, N. J.

547	Agawam	5,075	Cont.	Cargo	5-30-18	12-17-18	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
548	Alamosa	5,075	Cont.	Cargo	7-4-18	3-28-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
549	Alcona	5,075	Cont.	Cargo	7-4-18	3-21-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
550	Ingold	5,075	Cont.	Cargo	8-31-18	4-10-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
551	Charlot	5,075	Cont.	Cargo	9-12-18	4-9-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
552	Chetopa	5,075	Cont.	Cargo	7-14-18	8-28-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
553	Cokato	5,075	Cont.	Cargo	9-22-18	3-20-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
554	Decatur Bridge	5,075	Cont.	Cargo	11-23-18	4-30-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
555	Fort Pitt Bridge	5,075	Cont.	Cargo	12-15-18	4-23-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
556	Monana	5,075	Cont.	Cargo	9-12-18	8-22-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
557	Phoenix Bridge	5,075	Cont.	Cargo	8-31-18	4-7-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
558	Chicago Bridge	5,075	Cont.	Cargo	11-23-18	4-30-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
559	Mt. Vernon Bridge	5,075	Cont.	Cargo	12-15-18	4-23-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
560	Panola	5,075	Cont.	Cargo	9-22-18	5-2-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
561	Onekama	5,075	Cont.	Cargo	9-28-18	8-28-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
562	Jekyl	5,075	Cont.	Cargo	2-8-19	5-6-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
563	Milwaukee Bridge	5,075	Cont.	Cargo	3-2-19	5-21-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
564	Hico	5,075	Cont.	Cargo	10-6-18	4-8-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
565	Opelika	5,075	Cont.	Cargo	10-6-18	5-6-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
566	Passaic Bridge	5,075	Cont.	Cargo	2-16-19	5-15-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
567	Opequan	5,075	Cont.	Cargo	3-12-19	6-6-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
568	Allies	5,075	Cont.	Cargo	10-14-18	5-24-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
569	Consort	5,075	Cont.	Cargo	10-14-18	5-8-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
570	Wisconsin Bridge	5,075	Cont.	Cargo	3-2-19	6-21-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
571	Bethlehem Bridge	5,075	Cont.	Cargo	4-13-19	7-3-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
572	Faraby	5,075	Cont.	Cargo	12-28-18	5-19-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
573	Farnam	5,075	Cont.	Cargo	1-25-19	5-5-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
574	Jackson	5,075	Cont.	Cargo	4-19-19	6-24-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
575	Louisville Bridge	5,075	Cont.	Cargo	3-27-19	6-25-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
576	National Bridge	5,075	Cont.	Cargo	2-16-19	5-24-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
577	Nesco	5,075	Cont.	Cargo	2-8-19	5-19-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
578	Masca	5,075	Cont.	Cargo	2-16-19	5-23-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
579	Knoxville	5,075	Cont.	Cargo	3-27-19	6-21-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
580	Anniston	5,075	Cont.	Cargo	3-30-19	6-18-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
581	Chattanooga	5,075	Cont.	Cargo	3-30-19	6-17-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
582	Montgomery	5,075	Cont.	Cargo	3-31-19	6-21-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
583	St. Augustine	5,075	Cont.	Cargo	4-9-19	6-27-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
584	Bound Brook	5,075	Cont.	Cargo	3-12-19	7-3-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
585	Brasher	5,075	Cont.	Cargo	4-30-19	7-14-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
586	Johnson City	5,075	Cont.	Cargo	4-26-19	7-1-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
587	Shortsville	5,075	Cont.	Cargo	4-19-19	8-6-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
588	Jefferson County	5,075	Cont.	Cargo	4-30-19	7-8-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
589	Hillsborough County	5,075	Cont.	Cargo	4-13-19	6-30-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
590	Dade County	5,075	Cont.	Cargo	5-15-19	7-24-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
591	St. Johns County	5,075	Cont.	Cargo	5-15-19	8-11-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
592	Davidson County	5,075	Cont.	Cargo	5-27-19	8-16-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
593	Walkill	5,075	Cont.	Cargo	5-27-19	8-8-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6
594	Woodmansie	5,075	Cont.	Cargo	6-16-19	9-5-19	10.50	1500 S	Oil	324-0	x 46-0 x 28-6

1919 Construction Record of U.S. Yards

Submarine Boat Corp., Newark, N. J. (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
595	Boston Bridge	5,075	Cont.	Cargo	5-24-19	7-12-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
596	Bay Head	5,075	Cont.	Cargo	5-24-19	7-25-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
785	Punta	5,075	Cont.	Cargo	6-16-19	8-30-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
786	Asimippi	5,075	Cont.	Cargo	5-30-19	8-15-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
787	Delavan	5,075	Cont.	Cargo	6-25-19	9-20-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
788	Cairo	5,075	Cont.	Cargo	5-30-19	8-16-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
789	Pawtucket	5,075	Cont.	Cargo	5-30-19	8-4-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
790	Haddon	5,075	Cont.	Cargo	7-3-19	9-6-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
791	Cambridge	5,075	Cont.	Cargo	6-30-19	8-29-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
792	Asquam	5,075	Cont.	Cargo	7-10-19	8-30-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
793	Abianset	5,075	Cont.	Cargo	7-24-19	9-13-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
794	Lackawanna Valley	5,075	Cont.	Cargo	7-19-19	9-12-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
795	Waco	5,075	Cont.	Cargo	7-1-19	9-6-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
796	Asabeth	5,075	Cont.	Cargo	7-31-19	9-20-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
797	Lordship Manor	5,075	Cont.	Cargo	7-31-19	9-18-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
798	Parksville	5,075	Cont.	Cargo	8-15-19	9-27-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
799	Fourth Alabama	5,075	Cont.	Cargo	7-21-19	9-13-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
800	Monantum	5,075	Cont.	Cargo	8-7-19	9-27-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
801	Buffalo Bridge	5,075	Cont.	Cargo	8-16-19	10-4-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
802	Putnam	5,075	Cont.	Cargo	8-13-19	9-25-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
803	Continental Bridge	5,075	Cont.	Cargo	8-29-19	10-9-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
804	Clark Mills	5,075	Cont.	Cargo	8-27-19	10-6-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
805	Federal Bridge	5,075	Cont.	Cargo	8-29-19	10-18-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
806	Marodak	5,075	Cont.	Cargo	8-30-19	10-18-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
807	Independent Bridge	5,075	Cont.	Cargo	9-18-19	10-29-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
808	Kootenai	5,075	Cont.	Cargo	9-24-19	11-2-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
809	Coquit	5,075	Cont.	Cargo	9-13-19	10-22-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
810	Cook	5,075	Cont.	Cargo	9-23-19	11-10-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
811	Hamlin	5,075	Cont.	Cargo	9-30-19	11-18-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
812	Moose Haucic	5,075	Cont.	Cargo	9-13-19	10-22-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
813	Kenwood Bridge	5,075	Cont.	Cargo	9-25-19	11-6-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
814	Lackawanna Bridge	5,075	Cont.	Cargo	9-20-19	10-28-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
815	Indiana Bridge	5,075	Cont.	Cargo	10-16-19	11-20-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
816	Costata	5,075	Cont.	Cargo	10-18-19	.....	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
817	Laeside B.idge	5,075	Cont.	Cargo	10-31-19	12-12-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
818	Cushnet	5,075	Cont.	Cargo	10-17-19	12-20-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
819	Cuttyhunk	5,075	Cont.	Cargo	10-20-19	12-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
820	Massillon Bridge	5,075	Cont.	Cargo	10-30-19	12-19	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
821	Northwestern Bridge	5,075	Cont.	Cargo	10-29-19	.....	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
822	Massick	5,075	Cont.	Cargo	11-5-19	.....	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
823	Margus	5,075	Cont.	Cargo	10-28-19	.....	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
824	Mopang	5,075	Cont.	Cargo	11-14-19	.....	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
825	Mimowawa	5,075	Cont.	Cargo	11-24-19	1-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
826	Rock Island Bridge	5,075	Cont.	Cargo	11-27-19	1-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
827	Toledo Bridge	5,075	Cont.	Cargo	12-9-19	1-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
828	Monomac	5,075	Cont.	Cargo	12-1-19	1-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
829	Vincennes Bridge	5,075	Cont.	Cargo	12-9-19	1-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
830	Virginia Bridge	5,075	Cont.	Cargo	12-9-19	1-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
831	Pittsburgh Bridge	5,075	Cont.	Cargo	12-8-19	1-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
832	Archbold Bridge	5,075	Cont.	Cargo	12-19	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
833	East Chicago	5,075	Cont.	Cargo	12-24-19	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
834	Noodle Island Bridge	5,075	Cont.	Cargo	12-19	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
835	Haslehurst	5,075	Cont.	Cargo	12-18	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
836	Rising Sun	5,075	Cont.	Cargo	12-19	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
837	Riverside Bridge	5,075	Cont.	Cargo	12-19	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
838	Maravia Bridge	5,075	Cont.	Cargo	1-20	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
839	Des Moines Bridge	5,075	Cont.	Cargo	1-20	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
840	The Plow City	5,075	Cont.	Cargo	1-20	2-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
841	Sterling Steel Bridge	5,075	Cont.	Cargo	1-20	3-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
842	Holyoke Bridge	5,075	Cont.	Cargo	1-20	3-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
843	Anthracite Bridge	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
844	Fort Armstrong	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
845	Tona	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
846	New England Iron	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
847	Tonesit	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
848	Schuykill Bridge	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
849	Tidadi	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
850	Wheeling Mold	5,075	Cont.	Cargo	2-20	4-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
851	Tashmoor	5,075	Cont.	Cargo	3-20	5-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
852	Everett Bridge	5,075	Cont.	Cargo	3-20	5-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6
853	Susled	5,075	Cont.	Cargo	4-20	6-20	10.50	1500 S	Oil	324-0 x 46-0 x 28-6	22-6

Agency District

Merchant Shipbuilding Corp., Harriman, Pa.

597	Cabegon	9,000	Cont.	Cargo	12-14-18	3-1-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
598	Wathena	9,000	Cont.	Cargo	9-11-18	2-1-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
599	Watowwan	9,000	Cont.	Cargo	8-14-18	3-4-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
600	Waubesa	9,000	Cont.	Cargo	10-12-18	2-22-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
601	Wauconida	9,000	Cont.	Cargo	3-8-19	4-27-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
602	Waukau	9,000	Cont.	Cargo	3-31-19	5-28-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
603	Waxahachie	9,000	Cont.	Cargo	5-6-19	6-23-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
604	Mercer Victory	9,000	Cont.	Cargo	6-12-19	9-11-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
605	Winyah	9,000	Cont.	Cargo	5-16-19	7-19-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
606	Neshaminy	9,000	Cont.	Cargo	5-31-19	7-3-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
607	Intan	9,000	Cont.	Cargo	4-1-19	6-11-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
608	Wynooche	9,000	Cont.	Cargo	2-1-19	4-4-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
609	Costigan	9,000	Cont.	Cargo	6-17-19	7-31-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6
610	Kittesum	9,000	Cont.	Cargo	7-25-19	8-25-19	11.00	3000 S	Oil	401-0 x 54-0 x 32-9	25-6

1919 Construction Record of U.S. Yards

Merchant Shipbuilding Corp., Harriman, Pa. (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches			Draft ft. in.
611	Epitacio Pessoa	9,000	Cont.	Cargo	9-5-19	9-29-19	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
612	Auditor	9,000	Cont.	Cargo	9-22-19	10-18-19	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
613	Bensalem	9,000	Cont.	Cargo	9-24-19	11-10-19	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
614	Lycoming	9,000	Cont.	Cargo	10-27-19	12-19	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
615	Kayseeka	9,000	Cont.	Cargo	11-26-19		11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
616	Bazington	9,000	Cont.	Cargo	11-10-19	12-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
617	Mitchell	9,000	Cont.	Cargo	12-3-19	1-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
618	City of Alma	9,000	Cont.	Cargo	12-19	1-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
619	Davenport	9,000	Cont.	Cargo	1-20	2-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
620	Delanson	9,000	Cont.	Cargo	1-20	2-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
621	Evegreen City	9,000	Cont.	Cargo	4-20	5-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
622	Asnebenskit	9,000	Cont.	Cargo	4-20	5-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
623	Arizpa	9,000	Cont.	Cargo	4-20	6-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
624	Aranea	9,000	Cont.	Cargo	5-20	6-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
625	Algic	9,000	Cont.	Cargo	6-20	6-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
626	Vaba	9,000	Cont.	Cargo	6-20	7-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
627	Yaka	9,000	Cont.	Cargo	6-20	7-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
628	Bonnie Brook	9,000	Cont.	Cargo	8-20	9-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
629	Yupalga	9,000	Cont.	Cargo	8-20	10-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
630	Yalza	9,000	Cont.	Cargo	11-20	1-21	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
631	Wahconah	9,000	Cont.	Cargo	11-20	12-20	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
632	Wacosta	9,000	Cont.	Cargo	12-20	2-21	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
633	Nacata	9,000	Cont.	Cargo	1-21	3-21	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
634	Naamihok	9,000	Cont.	Cargo	1-21	3-21	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
635	Narberth	9,000	Cont.	Cargo	1-21	3-21	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6
636	Nautukko	9,000	Cont.	Cargo	3-21	4-21	11.00	3000 S	Oil	401-0	x 54-0	x 32-9	25-6

American International Shipbuilding Corp., Hog Island, Pa.

493	Sac City	7,500	Cont.	Cargo	9-30-18	1-6-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
494	Sacandaga	7,500	Cont.	Cargo	10-29-18	1-22-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
495	Saccharappa	7,500	Cont.	Cargo	8-24-18	12-31-18	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
496	Saco	7,500	Cont.	Cargo	12-30-18	4-19-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
497	Sagaporack	7,500	Cont.	Cargo	12-29-18	3-24-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
498	Prusa	7,500	Cont.	Cargo	12-23-18	3-1-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
499	Sagutache	7,500	Cont.	Cargo	11-22-18	2-15-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
500	Santie	7,500	Cont.	Cargo	12-27-18	4-30-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
501	Sauda	7,500	Cont.	Cargo	12-31-18	4-18-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
502	Sangamon	7,500	Cont.	Cargo	2-28-19	5-10-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
503	Sapinero	7,500	Cont.	Cargo	11-22-18	3-4-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
504	Sacoxie	7,500	Cont.	Cargo	3-22-19	5-9-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
505	Sataria	7,500	Cont.	Cargo	4-12-19	6-3-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
506	Saucen	7,500	Cont.	Cargo	12-31-18	4-9-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
507	Saugerties	7,500	Cont.	Cargo	1-18-19	4-11-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
508	Saugus	7,500	Cont.	Cargo	2-21-19	5-17-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
509	Seantic	7,500	Cont.	Cargo	4-26-19	6-28-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
510	Oyontz	7,500	Cont.	Cargo	5-20-19	7-10-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
511	Schenectady	7,500	Cont.	Cargo	3-15-19	5-10-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
512	Schodack	7,500	Cont.	Cargo	1-18-19	5-3-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
513	Schoharie	7,500	Cont.	Cargo	3-8-19	5-23-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
514	Schoodic	7,500	Cont.	Cargo	3-31-19	5-31-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
515	Schroon	7,500	Cont.	Cargo	4-22-19	6-18-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
516	Blair	7,500	Cont.	Cargo	5-3-19	6-16-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
517	Liberty Glo	7,500	Cont.	Cargo	6-14-19	8-2-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
518	Casper	7,500	Cont.	Cargo	6-25-19	8-14-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
519	Kishacoquillas	7,500	Cont.	Cargo	4-16-19	6-27-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
520	Liberty Land	7,500	Cont.	Cargo	7-17-19	8-28-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
521	Malden Creek	7,500	Cont.	Cargo	5-30-19	7-24-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
522	Seekonk	7,500	Cont.	Cargo	4-5-19	6-5-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
523	Lehigh	7,500	Cont.	Cargo	5-30-19	7-28-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
524	Nedmac	7,500	Cont.	Cargo	5-30-19	7-26-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
525	Lebanon	7,500	Cont.	Cargo	7-18-19	9-8-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
526	Fluor Spar	7,500	Cont.	Cargo	6-7-19	8-1-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
527	Shannock	7,500	Cont.	Cargo	8-8-19	9-26-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
528	Shanue	7,500	Cont.	Cargo	5-10-19	6-27-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
529	Luxpalle	7,500	Cont.	Cargo	5-30-19	7-28-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
530	Salvation Lass	7,500	Cont.	Cargo	5-24-19	7-10-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
531	Corson	7,500	Cont.	Cargo	6-19-19	8-14-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
532	Pipestone Co.	7,500	Cont.	Cargo	5-30-19	7-16-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
533	Afel	7,500	Cont.	Cargo	6-28-19	8-23-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
534	Bird City	7,500	Cont.	Cargo	8-15-19	9-29-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
535	City of Fairbury	7,500	Cont.	Cargo	7-2-19	8-23-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
536	Nobles	7,500	Cont.	Cargo	8-23-19	10-6-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
537	Shickshinny	7,500	Cont.	Cargo	8-5-19	9-20-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
538	Minnequa	7,500	Cont.	Cargo	7-12-19	9-6-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
539	Tulsa	7,500	Cont.	Cargo	7-26-19	9-19-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
540	Lacomb	7,500	Cont.	Cargo	7-19-19	9-13-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
541	Labette	7,500	Cont.	Cargo	7-30-19	9-23-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1482	Inspector	7,500	Cont.	Cargo	9-18-19	10-31-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1483	Hog Island	7,500	Cont.	Cargo	8-29-19	10-15-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1484	Sinsinawa	7,500	Cont.	Cargo	9-6-19	10-21-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1485	Chickasaw	7,500	Cont.	Cargo	9-10-19	10-29-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1486	Afoundria	7,500	Cont.	Cargo	9-30-19	11-18-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1487	Casey	7,500	Cont.	Cargo	10-11-19	11-26-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1488	Clavarrack	7,500	Cont.	Cargo	9-26-19	11-15-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1489	Conhoma Co.	7,500	Cont.	Cargo	10-8-19	12-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1490	Magma, Io	7,500	Cont.	Cargo	9-23-19	10-31-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1491	Clearwater	7,500	Cont.	Cargo	11-19	1-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1492	City of Alton	7,500	Cont.	Cargo	10-6-19	11-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1493	Chester Valley	7,500	Cont.	Cargo	11-19	1-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1494	City of Flint	7,500	Cont.	Cargo	11-19	1-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1495	Cliffwood	7,500	Cont.	Cargo	11-12-19	1-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1496	Wildwood	7,500	Cont.	Cargo	11-5-19	12-2-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0

1919 Construction Record of U.S. Yards

American International Shipbuilding Corp., Hog Island, Pa. (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches			Draft ft. in.
1497	Clontarf	7,500	Cont.	Cargo	11-19	1-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1498	City of St. Joseph	7,500	Cont.	Cargo	....	....	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1499	Kenowis	7,500	Cont.	Cargo	11-19	2-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1500	Sundance	7,500	Cont.	Cargo	10-25-19	12-13-19	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1501	Coelada	7,500	Cont.	Cargo	....	....	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1502	Coeur d'Alene	7,500	Cont.	Cargo	10-19	3-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1503	Cold Brook	7,500	Cont.	Cargo	10-18-19	....	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1504	Cold Harbo	7,500	Cont.	Cargo	12-19	2-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1505	Hidalgo	7,500	Cont.	Cargo	12-19	2-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1506	Coldwater	7,500	Cont.	Cargo	12-19	2-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1507	Coleta	7,500	Cont.	Cargo	12-19	3-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1508	Colfax	7,500	Cont.	Cargo	1-20	3-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1509	Collamer	7,500	Cont.	Cargo	1-20	3-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1510	Collingdale	7,500	Cont.	Cargo	2-20	4-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1511	Collingsworth	7,500	Cont.	Cargo	1-20	3-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1512	Colosse	7,500	Cont.	Cargo	2-20	5-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1513	Coltraps	7,500	Cont.	Cargo	1-20	4-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1514	Comerant	7,500	Cont.	Cargo	1-20	4-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1515	Cominsky	7,500	Cont.	Cargo	1-20	4-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1516	Commack	7,500	Cont.	Cargo	2-20	5-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1517	Comobabi	7,500	Cont.	Cargo	2-20	5-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1518	Concouilly	7,500	Cont.	Cargo	2-20	5-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1519	Conchatta	7,500	Cont.	Cargo	2-20	5-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1520	Concejos	7,500	Cont.	Cargo	3-20	6-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1521	Connees Peak	7,500	Cont.	Cargo	3-20	6-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1522	Hexeena	7,500	Cont.	Cargo	3-20	6-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1523	Capillo	7,500	Cont.	Cargo	3-20	6-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1524	Capulin	7,500	Cont.	Cargo	3-20	6-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1525	Cardington	7,500	Cont.	Cargo	4-20	6-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1526	Cardonia	7,500	Cont.	Cargo	4-20	7-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1527	Carenco	7,500	Cont.	Cargo	4-20	7-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1528	Carlton	7,500	Cont.	Cargo	4-20	6-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1529	Carplake	7,500	Cont.	Cargo	5-20	7-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1530	Carrabelle	7,500	Cont.	Cargo	5-20	7-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1531	Chenoa	7,500	Cont.	Cargo	5-20	7-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1532	Carleay	7,500	Cont.	Cargo	5-20	8-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1533	Casagrande	7,500	Cont.	Cargo	5-20	8-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1534	Casanova	7,500	Cont.	Cargo	5-20	7-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1535	Cassimir	7,500	Cont.	Cargo	6-20	9-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1536	Castana	7,500	Cont.	Cargo	6-20	9-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1537	Manatawny	7,500	Cont.	Cargo	5-20	8-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1538	Catahoula	7,500	Cont.	Cargo	5-20	8-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1539	Catalpa	7,500	Cont.	Cargo	5-20	8-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1540	Calauet	7,500	Cont.	Cargo	5-20	8-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
1541	Cedar Hurst	7,500	Cont.	Cargo	5-20	8-20	11.50	2500 S	Oil	390-0	x 54-0	x 32-0	24-0
669	U. S. A. T. Cambrai	8,000	Cont.	Troop	12-6-19	3-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
670	U. S. A. T. Cantigny	8,000	Cont.	Troop	10-27-19	1-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
671	U. S. A. T. St. Mihiel	8,000	Cont.	Troop	12-19	4-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
672	U. S. A. T. Argonne	8,000	Cont.	Troop	11-18-19	2-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
673	Mt. Uraka	8,000	Cont.	Troop	12-19	2-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
674	U. S. A. T. Chateau Thierry	8,000	Cont.	Troop	12-19	2-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
675	Mt. Catoosa	8,000	Cont.	Troop	12-19	4-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
676	U. S. A. T. Marne	8,000	Cont.	Troop	1-20	4-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
677	Mt. Pine	8,000	Cont.	Troop	2-20	5-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
678	Mt. Bienville	8,000	Cont.	Troop	12-19	4-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
679	U. S. A. T. Aisne	8,000	Cont.	Troop	2-20	5-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0
680	U. S. A. T. Somme	8,000	Cont.	Troop	4-20	5-20	15.00	6000 S	Oil	435-0	x 58-0	x 40-0	27-0

Middle Atlantic District

Baltimore Dry Docks & Ship Building Co., Baltimore

194	Osawatimie	8,800	Cont.	Cargo	12-7-18	1-31-19	10.50	2500 S	Oil	410-5 1/2	x 54-0	x 28-9	....
195	Oscoda	8,800	Cont.	Cargo	2-1-19	3-7-19	10.50	2500 S	Oil	410-5 1/2	x 54-0	x 28-9	....
196	Galahad	8,800	Cont.	Cargo	3-8-19	4-15-19	10.50	2500 S	Oil	410-5 1/2	x 54-0	x 28-9	....
197	Yesoking	8,800	Cont.	Cargo	4-12-19	5-21-19	10.50	2500 S	Oil	410-5 1/2	x 54-0	x 28-9	....
198	Benoni	8,800	Cont.	Cargo	5-31-19	7-28-19	10.50	2500 S	Oil	410-5 1/2	x 54-0	x 28-9	....
199	Dauperata	8,800	Cont.	Cargo	7-19-19	9-27-19	10.50	2500 S	Oil	410-5 1/2	x 54-0	x 28-9	....
1244	Bethelridge	10,300	Cont.	Tanker	9-20-19	12-15-19	10.00	2800 S	Oil	430-0	x 59-0	x 33-3	....
1245	Betterton	10,300	Cont.	Tanker	11-19	1-20	10.00	2800 S	Oil	430-0	x 59-0	x 33-3	....
1246	Miller County	10,300	Cont.	Tanker	1-20	2-20	10.00	2800 S	Oil	430-0	x 59-0	x 33-3	....
1247	Cecil County	10,300	Cont.	Tanker	3-20	5-20	10.00	2800 S	Oil	430-0	x 59-0	x 33-3	....
1248	Bid Well	10,300	Cont.	Tanker	4-20	6-20	10.00	2800 S	Oil	430-0	x 59-0	x 33-3	....
1249	Hampton Roads	10,300	Cont.	Tanker	6-20	8-20	10.00	2800 S	Oil	430-0	x 59-0	x 33-3	....
1337	Dannedake	6,000	Cont.	Tanker	7-26-19	11-20-19	10.00	1800 S	Oil	340-0	x 49-0	x 28-6	....
1338	Danville	6,000	Cont.	Tanker	11-1-19	1-20	10.00	1800 S	Oil	340-0	x 49-0	x 28-6	....
1239	City of Freeport	6,000	Cont.	Tanker	1-20	4-20	10.00	1800 S	Oil	340-0	x 49-0	x 28-6	....
1340	D'Arbonne	6,000	Cont.	Tanker	6-20	7-20	10.00	1800 S	Oil	340-0	x 49-0	x 28-6	....
83	North Pole	6,200	Req.	Refrig.	5-28-18	12-31-18	11.25	1800 S	Coal	340-0	x 49-0	x 28-6	23-0
89	Polar Star	6,200	Req.	Cargo	11-9-18	12-31-18	11.25	1800 S	Coal	340-0	x 49-0	x 28-6	23-0
91	Laurel	6,200	Req.	Cargo	2-8-19	3-6-19	11.25	1800 S	Coal	340-0	x 49-0	x 28-6	23-0
92	Calvert	6,200	Req.	Cargo	3-31-19	5-10-19	11.25	1800 S	Coal	340-0	x 49-0	x 28-6	23-0

Virginia Shipbuilding Corp., Alexandria, Va.

975	Gunston Hall	9,400	Cont.	Cargo	2-27-19	8-21-19	11.00	2800 I	Oil	402-6	x 53-0	x 34-6	....
976	Betsy Bell	9,400	Cont.	Cargo	5-24-19	8-21-19	11.00	2800 I	Oil	402-6	x 53-0	x 34-6	....
977	Vanada	9,400	Cont.	Cargo	6-21-19	9-16-19	11.00	2800 I	Oil	402-6	x 53-0	x 34-6	....

1919 Construction Record of U.S. Yards

Virginia Shipbuilding Corp., Alexandria, Va. (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched	Date delivered	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches			Draft ft. in.
					actual or estimated	actual or estimated							
978	H. F. Morse.....	9,400	Cont.	Cargo	8-9-19	10-23-19	11.00	2800 I	Oil	402-6	x 53-0	x 34-6	....
979	E. A. Morse.....	9,400	Cont.	Cargo	10-25-19	12-31-19	11.00	2800 I	Coal & Oil	402-6	x 53-0	x 34-6	....
980	.....	9,400	Cont.	Cargo	2-20	4-20	11.00	2800 I	Coal & Oil	402-6	x 53-0	x 34-6	....
981	.....	9,400	Cont.	Cargo	3-20	5-20	11.00	2800 I	Coal & Oil	402-6	x 53-0	x 34-6	....
982	.....	9,400	Cont.	Cargo	3-20	7-20	11.00	2800 I	Coal & Oil	402-6	x 53-0	x 34-6	....
983	.....	9,400	Cont.	Cargo	2-20	8-20	11.00	2800 I	Coal & Oil	402-6	x 53-0	x 34-6	....
984	.....	9,400	Cont.	Cargo	9-20	12-20	11.00	2800 I	Coal & Oil	402-6	x 53-0	x 34-6	....

Bethlehem Shipbuilding Corp., Ltd. (Maryland Plant), Sparrows Point, Md.

1145	Houma	10,100	Cont.	Tanker	11-2-18	3-31-19	11.00	2600 I	Oil	435-0	x 56-0	x 33-6
1146	Hoven	10,100	Cont.	Tanker	1-18-19	5-16-19	11.00	2600 I	Oil	435-0	x 56-0	x 33-6
1147	Hoxbar	10,100	Cont.	Tanker	2-15-19	6-14-19	11.00	2600 I	Oil	435-0	x 56-0	x 33-6
1164	Berrien	13,000	Cont.	P. & C.	1-20	5-20	17.50	12,000 S	Oil	518-0	x 72-0	x 50-0
1165	Bertice	13,000	Cont.	P. & C.	3-20	6-20	17.50	12,000 S	Oil	518-0	x 72-0	x 50-0
1548	Hoxie	7,400	Cont.	Cargo	12-7-18	3-15-19	11.00	2500 I	Oil or Coal	377-0	x 52-0	x 29-6
1549	Huachuca	7,400	Cont.	Cargo	5-3-19	6-30-19	11.00	2500 I	Oil or Coal	377-0	x 52-0	x 29-6
1550	Gosport	7,400	Cont.	Cargo	9-20-19	10-30-19	11.00	2500 I	Oil or Coal	377-0	x 52-0	x 29-6
1551	Hugoton	10,100	Cont.	Tanker	4-12-19	7-28-19	11.00	2500 I	Oil or Coal	435-0	x 56-0	x 33-6
1552	Huguenot	10,100	Cont.	Tanker	6-12-19	8-21-19	11.00	2500 I	Oil or Coal	435-0	x 56-0	x 33-6
1553	Hulaco	10,100	Cont.	Tanker	7-26-19	9-30-19	11.00	2500 I	Oil or Coal	435-0	x 56-0	x 33-6
1554	Antietam	10,100	Cont.	Tanker	9-6-19	11-25-19	11.00	2500 I	Oil or Coal	435-0	x 56-0	x 33-6
1673	Hazood	10,100	Cont.	Tanker	11-15-19	1-24	11.00	2600 I	Oil	435-0	x 56-0	x 33-6
1674	Hahatonka	10,100	Cont.	Tanker	12-19	2-20	11.00	2600 I	Oil	435-0	x 56-0	x 33-6
1675	Hahira	10,100	Cont.	Tanker	3-20	5-20	11.00	2600 I	Oil	435-0	x 56-0	x 33-6
2505	Leominster	13,000	Cont.	P. & C.	4-20	8-20	17.50	12,000 S	Oil	518-0	x 72-0	x 50-0
2506	Willow Brook	13,000	Cont.	P. & C.	5-20	8-20	17.50	12,000 S	Oil	518-0	x 72-0	x 50-0
2507	Stillwater	13,000	Cont.	P. & C.	10-20	9-20	17.50	12,000 S	Oil	518-0	x 72-0	x 50-0
2508	Willane	13,000	Cont.	P. & C.	11-20	1-21	17.50	12,000 S	Oil	518-0	x 72-0	x 50-0
2509	Rancocas	13,000	Cont.	P. & C.	12-20	3-21	17.50	12,000 S	Oil	518-0	x 72-0	x 50-0

Carolina Shipbuilding Corp., Wilmington, N. C.

1446	Cranford	9,600	Cont.	Cargo	9-1-19	12-31-19	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11
1447	City of Omaha	9,600	Cont.	Cargo	11-15-19	2-20	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11
1448	City of Joliet	9,600	Cont.	Cargo	1-20	3-20	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11
1449	Winston Salem	9,600	Cont.	Cargo	2-20	4-20	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11
1450	Nemaha	9,600	Cont.	Cargo	5-20	8-20	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11
1451	City of Fort Worth	9,600	Cont.	Cargo	7-20	10-20	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11
1452	Hybert	9,600	Cont.	Cargo	9-20	12-20	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11
1453	Syros	9,600	Cont.	Cargo	10-20	1-21	11.00	2800 I	Oil or Coal	395-6	x 55-0	x 34-11

Newport News Shipbuilding & Drydock Co., Newport News, Va.

2564	Litchfield	13,000	Cont.	P. & C.	2-20	5-20	17.50	12,000 S	Oil or Coal	518-0	x 72-0	x 50-0
2565	Bayonne	13,000	Cont.	P. & C.	4-20	7-20	17.50	12,000 S	Oil or Coal	518-0	x 72-0	x 50-0
1654	Patoka	11,375	Cont.	Navy tanker	7-26-19	9-3-19	10.50	2800 I	Oil or Coal	463-3	x 60-0	x 37-2
1655	Ramapo	11,375	Cont.	Navy tanker	9-11-19	10-22-19	10.50	2800 I	Oil or Coal	463-3	x 60-0	x 37-2
1656	Rapidan	11,375	Cont.	Navy tanker	10-25-19	12-5-19	10.50	2800 I	Oil or Coal	463-3	x 60-0	x 37-2
1657	Salinas	11,375	Cont.	Navy tanker	1-20	3-20	10.50	2800 I	Oil or Coal	463-3	x 60-0	x 37-2
1658	Sapelo	11,375	Cont.	Navy tanker	1-20	3-20	10.50	2800 I	Oil or Coal	463-3	x 60-0	x 37-2
1659	Sepulga	11,375	Cont.	Navy tanker	5-20	6-20	10.50	2800 I	Oil or Coal	463-3	x 60-0	x 37-2
1660	Tippicanoe	11,375	Cont.	Navy tanker	6-20	7-20	10.50	2600 S	Oil or Coal	463-3	x 60-0	x 37-2
1661	Trinity	11,375	Cont.	Navy tanker	7-20	8-20	10.50	2600 S	Oil or Coal	463-3	x 60-0	x 37-2
213	Agwistar	7,200	Req.	Cargo	12-21-18	2-15-19	11.00	2200 I	Oil or Coal	370-0	x 53-0	x 30-0

Southern District

Merrill-Stevens Shipbuilding Corp., Jacksonville, Fla.

103	Ashbee	6,000	Cont.	Cargo	2-20-19	8-25-19	10.50	2000 S	Oil or Coal	334-6	x 49-0	x 27-6
104	Wekika	6,000	Cont.	Cargo	8-2-19	12-19	10.50	2000 S	Oil or Coal	334-6	x 49-0	x 27-6
105	Pineillas	6,000	Cont.	Cargo	12-31-19	2-20	10.50	2000 S	Oil or Coal	334-6	x 49-0	x 27-6
106	Chickamauga	6,000	Cont.	Cargo	1-20	4-20	10.50	2000 S	Oil or Coal	334-6	x 49-0	x 27-6
107	Jacksonville	6,000	Req.	Cargo	10-4-19	10-8-18	10.50	2000 S	Oil	.....	.....	.....

Alabama Dry Dock & Shipbuilding Co., Mobile, Ala.

301	U. S. Darlen	7,500	Cont.	Barge	8-30-19	12-15-19	.....	.....	.....	335-0	x 52-0	x 33-0
302	U. S. Mamei	7,500	Cont.	Barge	3-20	5-20	.....	.....	.....	335-0	x 52-0	x 33-0

Oscar Daniels Co., Tampa, Fla.

739	Yomachichi	9,500	Cont.	Cargo	2-22-19	10-16-19	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
740	Wilcox	9,500	Cont.	Cargo	4-19-19	12-15-19	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
741	Tampa	9,500	Cont.	Cargo	6-12-19	12-30-19	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
742	Seminole	9,500	Cont.	Cargo	7-19-19	2-20	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
743	Unicoi	9,500	Cont.	Cargo	10-23-19	3-20	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
744	Manatee	9,500	Cont.	Cargo	12-5-19	5-20	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
745	Sawokla	9,500	Cont.	Cargo	1-20	6-20	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
746	City of Rayville	9,500	Cont.	Cargo	4-20	9-20	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
747	City of Dalhart	9,500	Cont.	Cargo	5-20	10-20	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9
748	Imo	9,500	Cont.	Cargo	7-20	11-20	11.00	2800 I	Oil or Coal	402 0	x 54-0	x 33-9

1919 Construction Record of U.S. Yards

Pensacola Shipbuilding Co., Pensacola, Fla.

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
965	Escambia	9,000	Cont.	Cargo	5-24-19	10-30-19	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
966	Cushnoc	9,000	Cont.	Cargo	3-15-19	9-20-19	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
967	Noocalula	9,000	Cont.	Cargo	6-24-19	11-30-19	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
968	Red Mountain	9,000	Cont.	Cargo	7-15-19	12-30-19	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
969	Rockport	9,000	Cont.	Cargo	9-25-19	2-20	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
970	City of Sherman	9,000	Cont.	Cargo	11-30-19	5-20	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
971	City of Vernon	9,000	Cont.	Cargo	12-31-19	6-20	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
972	City of Weatherford	9,000	Cont.	Cargo	2-20	7-20	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
973	Hastings	9,000	Cont.	Cargo	3-20	6-20	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6
974	Nauquog	9,000	Cont.	Cargo	5-20	9-20	10.50	3000 S	Oil or Coal	401-0 x 54-0 x 32-9	25-6

Johnson Iron Works, Ltd., New Orleans

1298	Degolis	Cont.	Harbor tug	4-29-19	11-1-19	11.00	800 I	Coal	94-10 x 24-0 x 12-9	11-0
1299	Degrey	Cont.	Harbor tug	5-24-19	11-30-19	11.00	800 I	Coal	94-10 x 24-0 x 12-9	11-0
1300	Delamar	Cont.	Harbor tug	6-16-19	12-19	11.00	800 I	Coal	94-10 x 24-0 x 12-9	11-0
1301	Delanco	Cont.	Harbor tug	7-12-19	12-30-19	11.00	800 I	Coal	94-10 x 24-0 x 12-9	11-0
1302	Deland	Cont.	Harbor tug	9-3-19	4-20	11.00	800 I	Coal	94-10 x 24-0 x 12-9	11-0
1303	Delaplaine	Cont.	Harbor tug	10-25-19	5-20	11.00	800 I	Coal	94-10 x 24-0 x 12-9	11-0

Terry Shipbuilding Corp., Port Wentworth, Savannah, Ga.

1392	Darden	7,500	Cont.	Tanker	11-8-19	2-20	11.50	2800 I	Coal or Oil	392-0 x 51-0 x 30-2	24-3
1393	Dartford	7,500	Cont.	Tanker	12-15-19	3-20	11.50	2800 I	Coal or Oil	392-0 x 51-0 x 30-2	24-3
1394	Dassel	7,500	Cont.	Tanker	2-20	5-20	11.50	2800 I	Coal or Oil	392-0 x 51-0 x 30-2	24-3
1395	Dawkins	7,500	Cont.	Tanker	4-20	7-20	11.50	2800 I	Coal or Oil	392-0 x 51-0 x 30-2	24-3
1396	Dawson	7,500	Cont.	Tanker	7-20	11-20	11.50	2800 I	Coal or Oil	392-0 x 51-0 x 30-2	24-3

Doullut & Williams Shipbuilding Co., New Orleans

1907	Culberson	9,600	Cont.	Cargo	1-20	6-20	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0
1908	Potter	9,600	Cont.	Cargo	1-20	6-20	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0
1909	Wichita	9,600	Cont.	Cargo	2-20	8-20	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0
1910	City of Elwood	9,600	Cont.	Cargo	3-20	9-20	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0
1911	Jeff Davis	9,600	Cont.	Cargo	12-20	3-21	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0
1912	Galveston	9,600	Cont.	Cargo	12-20	3-21	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0
1913	Ward	9,600	Cont.	Cargo	1-21	4-21	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0
1914	Oldham	9,600	Cont.	Cargo	2-21	4-21	11.00	2800 S	Oil or Coal	395-6 x 55-0 x 34-11	27-0

Mobile Shipbuilding Co., Mobile, Ala.

653	Moshico	5,000	Cont.	Cargo	7-3-19	11-15-19	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6
654	Minooka	5,000	Cont.	Cargo	9-19-19	12-15-19	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6
655	Hutchinson	5,000	Cont.	Cargo	11-7-19	2-20	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6
656	Oklahoma City	5,000	Cont.	Cargo	11-30-19	2-20	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6
657	Cap. of Nebraska	5,000	Cont.	Cargo	2-20	5-20	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6
658	Houston	5,000	Cont.	Cargo	2-20	6-20	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6
1237	City of Lordsburg	5,000	Cont.	Cargo	4-20	7-20	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6
1238	City of Atlanta	5,000	Cont.	Cargo	7-20	10-20	10.50	1600 I	Oil	324-0 x 46-0 x 27-8	22-6

Tampa Shipbuilding & Engr. Co., Tampa, Fla.

31	Lithopolis	3,500	Req.	Cargo	3-31-18	2-6-19	9.50	.....	Coal	.....	.....
32	Everglades	3,500	Req.	Cargo	7-29-18	3-3-19	9.50	.....	Coal	.....	.....

Nashville Bridge Co., Nashville, Tenn.

2776	Nashville	1,800	Cont.	Barges	8-26-19	11-15-19	.....	.....	200-0 x 35-0 x 16-6	15-0
2777	Hermitage	1,800	Cont.	Barges	10-23-19	12-15-19	.....	.....	200-0 x 35-0 x 16-6	15-0
2778	Old Hickory	1,800	Cont.	Barges	1-20	3-20	.....	.....	200-0 x 35-0 x 16-6	15-0
2779	Caney Fork	1,800	Cont.	Barges	2-20	4-20	.....	.....	200-0 x 35-0 x 16-6	15-0

Southern Pacific District

Moore Shipbuilding Co., Oakland, Cal.

145	Oskawa	9,400	Cont.	Refrig.	5-18-18	12-30-18	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
146	Yamhill	9,400	Cont.	Refrig.	7-4-18	2-7-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
147	Yacurina	9,400	Cont.	Refrig.	7-4-18	2-13-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
148	Guimba	9,400	Cont.	Refrig.	7-4-18	6-7-19	11.00	2500 I	Oil	402-6 x 53-0 x 34-6	.....
149	Zaca	9,400	Cont.	Cargo	8-29-18	12-30-18	11.00	2800 I	Oil	402-6 x 53-0 x 34-6	.....
151	Kamesit	9,400	Cont.	Cargo	9-22-18	1-29-19	11.00	2800 I	Oil	402-6 x 53-0 x 34-6	.....
152	Keketticut	9,400	Cont.	Cargo	10-6-18	5-31-19	11.00	2800 I	Oil	402-6 x 53-0 x 34-6	.....
1015	Chipchung	9,400	Cont.	Cargo	10-26-18	5-31-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1016	Mulpum	9,400	Cont.	Cargo	12-1-18	6-14-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1017	Monasse	9,400	Cont.	Refrig.	12-21-18	7-19-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1018	Tuckanuck	9,400	Cont.	Cargo	1-30-19	7-24-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1019	Cotati	9,400	Cont.	Refrig.	3-30-19	8-26-19	11.00	2800 I	Oil	402-6 x 53-0 x 34-6	.....
1020	Nokatay	9,400	Cont.	Cargo	4-27-19	9-27-19	11.00	2800 S	Coal and Oil	402-6 x 53-0 x 34-6	.....
1021	Nockum	9,400	Cont.	Refrig.	4-27-19	12-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1022	Meharuno	9,400	Cont.	Refrig.	6-7-19	12-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1023	Naugus	9,400	Cont.	Cargo	7-2-19	12-19	11.00	2800 S	Coal and Oil	402-6 x 53-0 x 34-6	.....
1024	Quillwark	9,400	Cont.	Cargo	8-9-19	12-19	11.00	2800 S	Coal and Oil	402-6 x 53-0 x 34-6	.....
1025	Imlay	9,400	Cont.	Tanker	3-30-19	9-26-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1026	Misklaras	9,400	Cont.	Tanker	4-27-19	12-19	11.00	2800 S	Oil	402-6 x 53-0 x 34-6	.....
1027	Quabbin	10,000	Cont.	Tanker	6-24-19	12-19	11.50	2800 I	Oil	425-0 x 57-0 x 33-0	.....
1028	City of Reno	10,000	Cont.	Tanker	12-19	2-20	11.50	2800 I	Oil	425-0 x 57-0 x 33-0	.....
1029	Salina	10,000	Cont.	Tanker	12-19	3-20	11.50	2800 I	Oil	425-0 x 57-0 x 33-0	.....

1919 Construction Record of U.S. Yards

Moore Shipbuilding Co., Oakland, Cal. (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched	Date delivered	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars,			Draft ft. in.
					actual or estimated	actual or estimated				Beam molded,	Depth molded,	feet, inches	
1030	Sapulpa	10,000	Cont.	Tanker	12-19	4-20	11.50	2800 I	Oil	425-0	x 57-0	x 33-0	....
2233	Jalapa	9,400	Cont.	Cargo	12-19	3-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 26-6	....
2234	Mosella	9,400	Cont.	Cargo	12-19	2-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 26-6	....
2235	Jane Lew	9,400	Cont.	Cargo	1-20	4-20	11.00	2800 S	Coal and Oil	402-6	x 53-0	x 26-6	....
2236	Mursa	9,400	Cont.	Cargo	2-20	6-20	11.00	2800 S	Coal and Oil	402-6	x 53-0	x 26-6	....
2237	Nacbo	9,400	Cont.	Cargo	3-20	7-20	11.00	2800 S	Coal and Oil	402-6	x 53-0	x 26-6	....
2238	Narcissus	9,400	Cont.	Cargo	7-20	8-20	11.00	2800 S	Coal and Oil	402-6	x 53-0	x 26-6	....
2227	Meton	10,000	Cont.	Tanker	2-20	6-20	11.00	2800 I	Oil	425-0	x 57-0	x 33-0	....
2228	Mevania	10,000	Cont.	Tanker	1-20	5-20	11.00	2800 I	Oil	425-0	x 57-0	x 33-0	....
2229	Milo	10,000	Cont.	Tanker	6-20	9-20	11.00	2800 I	Oil	425-0	x 57-0	x 33-0	....

Western Pipe & Steel Co. of California, San Francisco

336	Oskaloosa	8,800	Cont.	Cargo	8-28-18	12-20-18	10.50	2500 S	Oil	410-0	x 54-0	x 29-9
337	West Vernal	8,800	Cont.	Cargo	10-13-18	2-1-19	10.50	2500 S	Oil	410-0	x 54-0	x 29-9
338	West Vaca	8,800	Cont.	Cargo	11-3-18	3-27-19	10.50	2500 S	Oil	410-0	x 54-0	x 29-9
339	West Ashawa	8,800	Cont.	Cargo	12-27-18	5-21-19	10.50	2500 S	Oil	410-0	x 54-0	x 29-9
340	West Alcoz	8,800	Cont.	Cargo	2-26-19	6-21-19	10.50	2500 S	Oil	410-0	x 54-0	x 29-9
341	West Aleta	8,800	Cont.	Cargo	3-15-19	7-28-19	10.50	2500 S	Oil	410-0	x 54-0	x 29-9
1148	West Cactus	8,800	Cont.	Cargo	5-4-19	8-29-19	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1149	West Caddoa	8,800	Cont.	Cargo	5-23-19	9-26-19	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1150	West Kader	8,800	Cont.	Cargo	7-2-19	12-19	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1151	West Cadron	8,800	Cont.	Cargo	7-26-19	12-19	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1152	West Cahokie	8,800	Cont.	Cargo	9-7-19	12-19	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1153	West Calera	8,800	Cont.	Cargo	12-20-19	2-20	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1154	West Camak	8,800	Cont.	Cargo	12-19	3-20	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1155	West Camargo	8,800	Cont.	Cargo	12-19	3-20	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1156	West Canon	8,800	Cont.	Cargo	3-20	5-20	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9
1157	West Carmona	8,800	Cont.	Cargo	6-20	8-20	10.50	2800 I	Oil	410-5½	x 54-0	x 29-9

Long Beach Shipbuilding Co., Long Beach, Cal.

425	Magunkook	6,000	Cont.	Cargo	9-25-18	1-23-19	11.00	2500 I	Oil	341-0	x 48-0	x 27-3
2075	West Kasson	8,800	Cont.	Cargo	3-15-19	6-30-19	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2076	West Keene	8,800	Cont.	Cargo	4-26-19	8-15-19	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2077	West Katan	8,800	Cont.	Cargo	5-26-19	9-23-19	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2078	Vinita	8,800	Cont.	Cargo	12-19	3-20	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2079	Haleakala	8,800	Cont.	Cargo	9-13-19	12-19	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2080	West Keats	8,800	Cont.	Cargo	1-20	3-20	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2081	West Kehar	8,800	Cont.	Cargo	2-20	5-20	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2082	West Kedron	8,800	Cont.	Cargo	3-20	6-20	10.50	2800 S	Coal and Oil	410-5½	x 54-0	x 29-9
2515	Wallingford	3,200	Cont.	Cargo	1-15-19	3-20-19	.....	1400 I	Oil or Coal	.....	.....	.....

Los Angeles Shipbuilding & Drydock Co., Los Angeles Bay, Cal.

763	West Grama	8,800	Cont.	Cargo	7-4-18	12-31-18	10.50	3500 I	Oil	410-5½	x 54-0	x 29-9
764	West Eral	8,800	Cont.	Cargo	8-17-18	2-4-19	10.50	3500 I	Oil	410-5½	x 54-0	x 29-9
765	West Amargosa	8,800	Cont.	Cargo	9-25-18	3-11-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
766	West Arjoda	8,800	Cont.	Cargo	10-17-18	4-16-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
767	West Cayoot	8,800	Cont.	Cargo	11-3-18	5-1-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
768	West Conob	8,800	Cont.	Cargo	12-1-18	5-24-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
769	West Calumb	8,800	Cont.	Cargo	12-29-18	9-20-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
770	West Selene	8,800	Cont.	Cargo	1-29-19	10-31-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
771	West Mingo	8,800	Cont.	Cargo	2-16-19	11-30-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
772	West Montop	8,800	Cont.	Cargo	3-30-19	12-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1402	West Hika	8,800	Cont.	Cargo	5-12-19	12-19	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1403	West Himod	8,800	Cont.	Cargo	8-6-19	2-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1404	The Angeles	8,800	Cont.	Cargo	12-19	3-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1405	West Hixton	8,800	Cont.	Cargo	12-19	2-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1406	Las Vegas	8,800	Cont.	Cargo	12-19	2-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1407	Crown City	8,800	Cont.	Cargo	1-20	3-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1408	West Holbrook	8,800	Cont.	Cargo	4-20	7-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1409	Topa Topa	8,800	Cont.	Cargo	7-20	10-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1410	West Homochito	8,800	Cont.	Cargo	7-20	10-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1411	West Honaker	8,800	Cont.	Cargo	6-20	9-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1412	West Cusseta	8,800	Cont.	Cargo	7-20	10-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9
1413	West O'Rowa	8,800	Cont.	Cargo	7-20	10-20	10.50	3500 I	Coal and Oil	410-5½	x 54-0	x 29-9

Pacific Coast Shipbuilding Co., Bay Point, Cal.

941	Diablo	9,400	Cont.	Cargo	11-30-18	5-29-19	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
942	Canumset	9,400	Cont.	Cargo	3-30-18	8-19-19	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
943	Cockaponset	9,400	Cont.	Cargo	5-4-19	12-19	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
944	Mohinkis	9,400	Cont.	Cargo	6-12-19	1-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
945	Sinasta	9,400	Cont.	Cargo	7-15-19	3-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
946	Lavada	9,400	Cont.	Cargo	8-23-19	4-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
947	Cuprum	9,400	Cont.	Cargo	3-20	9-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
948	Namasket	9,400	Cont.	Cargo	4-20	11-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
949	Meanticut	9,400	Cont.	Cargo	5-20	12-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6
950	Nashaba	9,400	Cont.	Cargo	7-20	12-20	11.00	2800 I	Coal and Oil	402-6	x 53-0	x 34-6

Hanlon Drydock & Shipbuilding Co., Inc., Oakland, Cal.

1107	Delfina	5,350	Cont.	Cargo	1-18-19	9-5-19	11.00	1800 I	Oil and Coal	320-9	x 46-0	x 26-9
1108	Delisue	5,350	Cont.	Cargo	3-11-19	9-30-19	11.00	1800 I	Oil and Coal	320-9	x 46-0	x 26-9
1109	Dellwood	5,350	Cont.	Cargo	6-4-19	12-19	11.00	1800 I	Oil and Coal	320-9	x 46-0	x 26-9
1110	Delrosa	5,350	Cont.	Cargo	7-15-19	12-19	11.00	1800 I	Oil and Coal	320-9	x 46-0	x 26-9
1111	Depere	5,350	Cont.	Cargo	8-9-19	1-20	11.00	1800 I	Oil and Coal	320-9	x 46-0	x 26-9
1112	Derblay	5,350	Cont.	Cargo	2-20	5-20	11.00	1800 I	Oil and Coal	320-9	x 46-0	x 26-9
2253	Jeptha	5,350	Cont.	Cargo	3-20	6-20	.....	2400 I	Oil and Coal	320-9	x 46-0	x 26-9
2254	Medon	5,350	Cont.	Cargo	4-20	7-20	.....	2400 I	Oil and Coal	320-9	x 46-0	x 26-9
2255	Memnon	5,350	Cont.	Cargo	5-20	10-20	.....	2400 I	Oil and Coal	320-9	x 46-0	x 26-9

1919 Construction Record of U.S. Yards

Bethlehem Shipbuilding Corp., Ltd., Alameda, Cal.

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
1127	Derbyline	10,100	Cont.	Tanker	3-11-19	8-7-19	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1128	Deroche	10,100	Cont.	Tanker	4-12-19	9-24-19	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1129	Devilante	10,100	Cont.	Tanker	5-14-19	9-8-19	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1130	Dillwyn	10,100	Cont.	Tanker	6-19-19	9-30-19	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1131	Diwoth	10,100	Cont.	Tanker	6-30-19	12-19	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1132	City of Alameda	10,100	Cont.	Tanker	7-16-19	12-19	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1133	Utacarbon	10,100	Cont.	Tanker	7-31-19	12-19	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1134	Portola Plumas	10,100	Cont.	Tanker	8-30-19	2-20	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1135	Cathwood	10,100	Cont.	Tanker	9-25-19	3-20	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1136	Richconcal	10,100	Cont.	Tanker	12-19	2-20	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1137	Dungannon	10,100	Cont.	Tanker	1-20	4-20	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1138	Durango	10,100	Cont.	Tanker	2-20	5-20	11.00	2800 I	Oil and Coal	435-0 x 56-0 x 33-6	....
1223	Steadfast	12,000	Cont.	Cargo	12-24-18	5-8-19	11.00	3000 S	Oil and Coal	410-0 x 56-0 x 41-0	....
1574	Hefron	11,800	Cont.	T. oop	12-31-18	5-28-19	10.50	2800 I	Oil	440-0 x 56-0 x 28-6	....
1575	Hegira	11,800	Cont.	Cargo	1-29-19	6-27-19	11.00	2800 I	Oil	440-0 x 56-0 x 28-6	....
1676	Halo	10,100	Cont.	Tanker	3-20	6-20	11.00	2600 I	Oil	435-0 x 56-0 x 33-6	....
1677	Halsey	10,100	Cont.	Tanker	3-20	6-20	11.00	2600 I	Oil	435-0 x 56-0 x 33-6	....
1678	Halway	10,100	Cont.	Tanker	4-20	7-20	11.00	2600 I	Oil	435-0 x 56-0 x 33-6	....
1682	Pomona	11,800	Cont.	Cargo	2-20	5-20	10.50	2600 I	Coal & Oil	440-0 x 56-0 x 38-0	28-6
1683	Hanley	11,800	Cont.	Cargo	2-20	5-20	10.50	2600 I	Coal & Oil	440-0 x 56-0 x 38-0	28-6
1684	Hannawa	11,800	Cont.	Cargo	2-20	5-20	10.50	2600 I	Coal & Oil	440-0 x 56-0 x 38-0	28-6
168	Eclipse	11,800	Req.	Cargo	10-20-18	2-1-19	11.00	3000 S	Oil	440-0 x 56-0 x 38-0	....
169	Archer	11,800	Req.	Cargo	11-4-18	2-28-19	10.50	3000 S	Oil	440-0 x 56-0 x 38-0	....

Union Construction Co., Oakland, Cal.

1461	Hatchie	9,400	Cont.	Cargo	4-28-19	8-27-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1462	Hshaway	9,400	Cont.	Cargo	5-19-19	9-30-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1463	City of Berkeley	9,400	Cont.	Cargo	6-14-19	8-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1464	Harilah	9,400	Cont.	Cargo	7-30-19	11-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1465	Hawarden	9,400	Cont.	Cargo	7-23-19	....	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1466	Haxtum	9,400	Cont.	Cargo	9-27-19	2-20	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1467	Hayden	9,400	Cont.	Cargo	12-19	4-20	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1468	Haymon	9,400	Cont.	Cargo	12-19	4-20	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1469	Haynie	9,400	Cont.	Cargo	12-19	4-20	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....
1470	Heber	9,400	Cont.	Cargo	4-20	7-20	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 34-6	....

Southwestern Shipbuilding Co., San Pedro, Cal.

1371	West Carnifax	8,800	Cont.	Cargo	10-19-18	12-31-18	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1372	West Ca uth	8,800	Cont.	Cargo	12-31-18	2-24-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1373	West Catanage	8,800	Cont.	Cargo	2-1-19	3-25-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1374	West Sequana	8,800	Cont.	Cargo	3-1-19	4-30-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1375	West Cavanal	8,800	Cont.	Cargo	3-20-19	5-31-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1376	West Cawihon	8,800	Cont.	Cargo	4-16-19	6-27-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1377	West Coyote	8,800	Cont.	Cargo	5-29-19	8-15-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1378	West Chetac	8,800	Cont.	Cargo	5-14-19	7-24-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1379	West Inskip	8,800	Cont.	Cargo	6-21-19	9-12-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
1380	Bakefield	8,800	Cont.	Cargo	7-7-19	12-19	10.50	2800 I	Coal & Oil	410-5½ x 54-0 x 29-9	....
2206	West Neris	8,800	Cont.	Cargo	8-24-19	12-19	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....
2207	West Niger	8,800	Cont.	Cargo	9-28-19	1-20	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....
2208	West Nilus	8,800	Cont.	Cargo	12-19	2-20	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....
2209	West Nivla	8,800	Cont.	Cargo	1-20	3-20	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....
2210	West Normentum	8,800	Cont.	Cargo	1-20	3-20	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....
2211	West No ranus	8,800	Cont.	Cargo	2-20	5-20	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....
2212	West Notus	8,800	Cont.	Cargo	3-20	6-20	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....
2213	West Numidia	8,800	Cont.	Cargo	6-20	8-20	10.50	2800 I	Coal or Oil	410-5½ x 54-0 x 29-9	....

Northern Pacific District Steel

Seattle Construction & Drydock Co., Seattle

105	Ossining	7,500	Cont.	Cargo	5-6-19	6-27-19	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....
106	Htibo	7,500	Cont.	Cargo	9-27-19	1-20	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....
107	Williamantic	7,500	Cont.	Cargo	5-29-18	10-31-18	10.50	2400 I	Oil	380-6 x 53-0 x 29-3	....
108	Deranof	7,500	Cont.	Cargo	6-20-18	12-26-18	10.50	2400 I	Oil	380-6 x 53-0 x 29-3	....
109	Delight	7,500	Cont.	Cargo	7-4-18	9-8-19	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....
110	Gaffney	7,500	Cont.	Cargo	7-25-18	1-20	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....
111	Jarona	7,500	Cont.	Cargo	11-30-18	5-12-19	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....
112	Remus	7,500	Cont.	Cargo	4-16-19	5-29-19	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....
113	Kvembo	7,500	Cont.	Cargo	6-4-19	9-30-19	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....
114	Quittacas	7,500	Cont.	Cargo	1-4-19	6-30-19	10.50	2400 I	Coal & Oil	380-6 x 53-0 x 29-3	....

Seattle No. Pacific Shipbuilding Co., Seattle

749	Ozette	9,400	Cont.	Cargo	9-28-18	4-23-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
750	Yak ok	9,400	Cont.	Cargo	10-31-18	7-25-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
751	Icon urum	9,400	Cont.	Cargo	11-26-18	8-25-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
752	Osaqumsick	9,400	Cont.	Cargo	4-5-19	7-25-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
753	Askawake	9,400	Cont.	Cargo	6-12-19	7-25-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
754	Orani	9,400	Cont.	Cargo	8-7-19	9-9-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
755	Chepadosa	9,400	Cont.	Cargo	9-12-19	10-2-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
756	Chicomilco	9,400	Cont.	Cargo	10-25-19	11-1-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
757	Minharm	9,400	Cont.	Cargo	11-22-19	12-5-19	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....
758	Maquari	9,400	Cont.	Cargo	12-27-19	2-20	11.00	2800 S	Coal & Oil	402-6 x 53-0 x 26-6	....

G. M. Standifer Construction Corp., Vancouver, Wash.

1063	Cokesit	9,400	Cont.	Cargo	1-2-19	5-3-19	11.00	2800 I	Coal & Oil	....	....
1064	Coaret	9,400	Cont.	Cargo	2-27-19	7-9-19	11.00	2800 I	Coal & Oil	....	....
1065	Waban	9,400	Cont.	Cargo	4-17-19	10-15-19	11.00	2800 I	Coal & Oil	....	....

1919 Construction Record of U.S. Yards

G. M. Standifer Construction Corp., Vancouver, Wash. (Continued)

U.S. No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
1066	Wawilona	9,400	Cont.	Cargo	5-17-19	10-30-19	11.00	2800 I	Coal & Oil	.....	.....
1067	Nismaha	9,400	Cont.	Cargo	7-21-19	11-11-19	11.00	2800 I	Coal & Oil	.....	.....
1068	Olockson	9,400	Cont.	Cargo	9-11-19	10-11-19	11.00	2800 I	Coal & Oil	.....	.....
1069	Montague	9,400	Cont.	Cargo	11-15-19	12-19	11.00	2800 I	Coal & Oil	.....	.....
1070	Abercos	9,400	Cont.	Cargo	12-10-19	2-20	11.00	2800 I	Coal & Oil	.....	.....
1071	Pawlet	9,400	Cont.	Cargo	1-20	3-20	11.00	2800 I	Coal & Oil	.....	.....
1072	Bearpout	9,400	Cont.	Cargo	2-20	4-20	11.00	2800 I	Coal & Oil	.....	.....

Northwest Steel Co., Portland, Oreg.

1075	West Wauna	8,800	Cont.	Cargo	11-9-19	1-14-19	11.50	2500 S	Coal & Oil	.....	.....
1076	West Compo	8,800	Cont.	Cargo	11-27-19	1-31-19	11.50	2500 S	Coal & Oil	.....	.....
1077	West Modus	8,800	Cont.	Cargo	12-21-19	2-28-19	11.50	2500 S	Coal & Oil	.....	.....
1078	West Tacook	8,800	Cont.	Cargo	1-14-19	4-23-19	11.50	2500 S	Coal & Oil	.....	.....
1079	West Tokus	8,800	Cont.	Cargo	1-28-19	4-9-19	11.50	2500 S	Coal & Oil	.....	.....
1080	West Nohno	8,800	Cont.	Cargo	2-12-19	5-8-19	11.50	2500 S	Coal & Oil	.....	.....
1414	West Cherow	8,800	Cont.	Cargo	2-28-19	5-17-19	11.50	2500 S	Coal	.....	.....
1415	West Celeron	8,800	Cont.	Cargo	3-17-19	6-7-19	11.50	2500 S	Coal & Oil	.....	.....
1416	West Cellina	8,800	Cont.	Cargo	3-28-19	6-21-19	11.50	2500 S	Coal & Oil	.....	.....
1417	Peer Lodge	8,800	Cont.	Cargo	4-11-19	7-7-19	11.50	2500 S	Coal & Oil	.....	.....
1418	Tripp	8,800	Cont.	Cargo	4-23-19	7-31-19	11.50	2500 S	Coal & Oil	.....	.....
1419	West Chatala	8,800	Cont.	Cargo	5-3-19	8-18-19	11.50	2500 S	Coal & Oil	.....	.....
1420	West Segovia	8,800	Cont.	Cargo	5-21-19	8-27-19	11.50	2500 S	Coal & Oil	.....	.....
1421	West Cheswald	8,800	Cont.	Cargo	6-20-19	9-13-19	11.50	2500 S	Coal & Oil	.....	.....
2368	West Karitans	8,800	Cont.	Cargo	8-6-19	9-26-19	11.50	2800 S	Coal & Oil	410-5½ x 54-0	x 29-9
2369	West Pocasset	8,800	Cont.	Cargo	8-18-19	10-9-19	11.50	2800 S	Coal & Oil	410-5½ x 54-0	x 29-9
2370	West Saginaw	8,800	Cont.	Cargo	9-6-19	10-22-19	11.50	2800 S	Coal & Oil	410-5½ x 54-0	x 29-9
2371	West Jaffrey	8,800	Cont.	Cargo	9-30-19	11-6-19	11.50	2800 S	Coal & Oil	410-5½ x 54-0	x 29-9

Columbia River Shipbuilding Corp., Portland, Oreg.

1081	West Cobalt	8,800	Cont.	Cargo	10-26-19	12-28-19	10.50	2500 S	Coal & Oil	.....	.....
1082	West Waunake	8,800	Cont.	Cargo	11-27-19	1-24-19	10.50	2500 S	Coal & Oil	.....	.....
1083	West Corum	8,800	Cont.	Cargo	1-2-19	2-8-19	10.50	2500 S	Coal & Oil	.....	.....
1084	West Imboden	8,800	Cont.	Cargo	2-11-19	3-13-19	10.50	2500 S	Coal & Oil	.....	.....
1085	West Munham	8,800	Cont.	Cargo	3-15-19	4-12-19	10.50	2500 S	Coal & Oil	.....	.....
1086	West Tolant	8,800	Cont.	Cargo	4-3-19	5-21-19	10.50	2500 S	Coal & Oil	.....	.....
1087	West Queches	8,800	Cont.	Cargo	4-16-19	5-24-19	10.50	2500 S	Coal & Oil	.....	.....
1088	West Nooska	8,800	Cont.	Cargo	5-23-19	6-30-19	10.50	2500 S	Coal & Oil	.....	.....
1693	West Harecuvar	8,800	Cont.	Cargo	2-1-19	2-24-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1694	West Hardaway	8,800	Cont.	Cargo	2-28-19	3-26-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1695	West Hargrave	8,800	Cont.	Cargo	4-10-19	4-30-19	10.50	2800 I	Coal	410-5½ x 54-0	x 29-8
1696	West Halian	8,800	Cont.	Cargo	5-3-19	6-12-19	10.50	2800 I	Coal	410-5½ x 54-0	x 29-8
1697	City of Eureka	8,800	Cont.	Cargo	5-8-19	5-26-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1698	Mount Evans	8,800	Cont.	Cargo	6-6-19	7-9-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1699	West Harshaw	8,800	Cont.	Cargo	6-25-19	7-29-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1700	West Harta	8,800	Cont.	Cargo	7-19-19	8-12-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1701	West Hartland	8,800	Cont.	Cargo	8-9-19	8-30-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1702	West Hartley	8,800	Cont.	Cargo	8-30-19	9-19-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1703	Silots	8,800	Cont.	Cargo	9-16-19	10-16-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8
1704	West Hassavampa	8,800	Cont.	Cargo	11-15-19	12-11-19	10.50	2500 S	Coal	410-5½ x 54-0	x 29-8

Skinner & Eddy Corp., Seattle

1188	West Maximus	8,800	Cont.	Cargo	12-23-19	4-12-19	11.50	2500 S	Coal & Oil	.....	.....
1734	Edgehill	9,600	Cont.	Cargo	12-24-19	4-2-19	11.50	2500 S	Coal & Oil	410-3 x 64-0	x 30-5
1735	Edgemont	9,600	Cont.	Cargo	1-11-19	4-21-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 38-3
1736	Edgemoor	9,600	Cont.	Cargo	3-29-19	5-8-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 38-3
1737	Edgewood	9,600	Cont.	Cargo	4-19-19	5-26-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 38-3
1738	Edisto	9,600	Cont.	Cargo	5-10-19	6-17-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 38-3
1739	Edmore	9,600	Cont.	Cargo	6-24-19	7-1-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 38-3
1740	City of Spokane	9,500	Cont.	Cargo	8-14-19	7-24-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 38-3
1741	Elbeek	9,500	Cont.	Cargo	6-28-19	8-7-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 38-3
1742	Effingham	9,500	Cont.	Cargo	10-7-19	11-3-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 38-3
1743	Effna	9,500	Cont.	Cargo	10-11-19	11-12-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 38-3
1744	Eglantine	9,500	Cont.	Cargo	10-25-19	11-19-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 38-3
1745	Egremont	9,600	Cont.	Cargo	11-1-19	11-29-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 38-3
1929	Eldena	9,600	Cont.	Cargo	3-22-19	5-1-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 37-9
1930	Polybius	9,600	Cont.	Cargo	4-12-19	5-19-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 37-9
1931	Eldridge	9,600	Cont.	Cargo	5-8-19	6-5-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 37-9
1932	Elmsport	9,600	Cont.	Cargo	6-7-19	7-2-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 37-9
1933	Colorado Spr.	9,600	Cont.	Cargo	6-26-19	7-29-19	11.50	2500 S	Coal & Oil	410-5½ x 54-0	x 37-9
1934	Wheatland Montana	9,600	Cont.	Cargo	8-4-19	8-30-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1935	Stanley	9,500	Cont.	Cargo	7-21-19	8-16-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1936	Elkridge	9,500	Cont.	Cargo	7-21-19	8-23-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1937	Elkhorn	9,500	Cont.	Cargo	8-21-19	9-18-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1938	Editor	9,500	Cont.	Cargo	8-16-19	9-8-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1939	Endicott	9,500	Cont.	Cargo	8-23-19	9-24-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1940	Elkton	9,500	Cont.	Cargo	9-10-19	9-29-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1941	Brave Coeur	9,500	Cont.	Cargo	9-6-19	10-11-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1942	Cripple Creek	9,500	Cont.	Cargo	9-27-19	10-21-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1943	Crisfield	9,500	Cont.	Cargo	9-23-19	10-23-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1944	Nile	9,600	Cont.	Cargo	11-17-19	12-10-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1945	Jadden	9,600	Cont.	Cargo	11-15-19	12-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9
1946	Crosskeys	9,600	Cont.	Cargo	11-22-19	12-19	11.50	2800 I	Coal & Oil	410-5½ x 54-0	x 37-9

Albina Engine & Machine Works, Inc., Portland, Oreg.

1216	Cadaretta	3,700	Cont.	Cargo	9-2-19	10-31-19	12.00	1400 I	Oil & Coal	.....	.....
1217	Caddopeak	3,700	Cont.	Cargo	10-18-19	12-4-19	12.00	1400 I	Oil & Coal	.....	.....
1218	Callabass	3,700	Cont.	Cargo	11-30-19	12-31-19	12.00	1400 I	Oil & Coal	.....	.....
1219	Jarox	3,700	Cont.	Cargo	12-30-19	1-31-19	12.00	1400 I	Oil & Coal	.....	.....
1688	Glendola	3,700	Cont.	Cargo	1-31-19	3-1-19	12.00	1400 I	Coal	289-0 x 44-0	x 21-6
1689	Glendoyle	3,700	Cont.	Cargo	2-26-19	3-25-19	12.00	1400 I	Coal	289-0 x 44-0	x 21-6
1690	Glorieta	3,700	Cont.	Cargo	3-20-19	5-13-19	12.00	1400 I	Coal	289-0 x 44-0	x 21-6
1691	Glymont	3,700	Cont.	Cargo	4-23-19	5-27-19	12.00	1400 I	Coal	289-0 x 44-0	x 21-6
1692	Glyndon	3,700	Cont.	Cargo	5-6-19	6-23-19	12.00	1400 I	Coal	289-0 x 44-0	x 21-6
2249	Meriden	3,700	Cont.	Cargo	5-22-19	7-22-19	12.00	1400 I	Coal	.....	.....
2250	Doylestown	3,700	Cont.	Cargo	6-12-19	8-19-19	12.00	1400 I	Coal	.....	.....

1919 Construction Record of U.S. Yards

J. F. Duthie & Co., Seattle.

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
1471	West Helix	8,800	Cont.	Cargo	12-14-18	5-2-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1472	West Hembrie	8,800	Cont.	Cargo	3-29-19	5-12-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1473	West Hematite	8,800	Cont.	Cargo	4-28-19	6-13-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1474	West Hemshaw	8,800	Cont.	Cargo	6-2-19	7-14-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1475	West Hepburn	8,800	Cont.	Cargo	6-21-19	8-2-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1476	Seattle Spirit	8,800	Cont.	Cargo	7-16-19	8-16-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1477	Dewey	8,800	Cont.	Cargo	8-23-19	9-30-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1478	Deuel	8,800	Cont.	Cargo	9-27-19	11-11-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1479	West Hesseltine	8,800	Cont.	Cargo	11-22-19	12-19	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
1480	West Ivan	8,800	Cont.	Cargo	12-20-19	1-20	10.50	2800 I	Coal	410-5½ x 54-0	x 28-8
2602	West Campgaw	8,800	Cont.	Cargo	1-20	2-20	10.50	2800 I	Coal & Oil	410-5½ x 54-0	x 30-2½
2603	West Mahwah	8,800	Cont.	Cargo	2-20	3-20	10.50	2800 I	Coal & Oil	410-5½ x 54-0	x 30-2½

Ames Shipbuilding & Dry Dock Co., Portland, Oreg.

2050	West Irmo	8,800	Cont.	Cargo	3-29-19	5-12-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2051	West Islay	8,800	Cont.	Cargo	4-28-19	7-8-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2052	West Isleta	8,800	Cont.	Cargo	5-15-19	7-31-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2053	West Islip	8,800	Cont.	Cargo	6-24-19	8-27-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2054	West Ison	8,800	Cont.	Cargo	7-26-19	9-20-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2055	West Ira	8,800	Cont.	Cargo	8-28-19	10-7-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2056	Cathlamet	8,800	Cont.	Cargo	9-27-19	10-28-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2057	West Iris	8,800	Cont.	Cargo	10-25-19	11-29-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2058	West Jans	8,800	Cont.	Cargo	11-15-19	12-19	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2059	West Jessup	8,800	Cont.	Cargo	1-20	3-20	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2060	West Jester	8,800	Cont.	Cargo	1-20	3-20	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
2061	West Jappa	8,800	Cont.	Cargo	2-20	4-20	11.50	2800 I	Coal & Oil	410-6 x 54-0	x 31-10½
11	Western Ally	8,500	Req.	Cargo	11-9-18	1-16-19	12.00	3500 I	Coal	410-6 x 54-0	x 31-7
12	Western Knight	8,500	Req.	Cargo	12-14-18	4-17-19	12.00	3500 I	Coal	410-6 x 54-0	x 31-7
13	Western Glen	8,500	Req.	Cargo	12-31-18	6-12-19	12.00	3500 I	Coal	410-6 x 54-0	x 31-7

Todd Drydock & Construction Corp., Tacoma, Wash.

2629	Olen	7,500	Cont.	Cargo	6-25-19	8-5-19	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2630	Ophis	7,500	Cont.	Cargo	7-30-19	9-30-19	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2631	Orcus	7,500	Cont.	Cargo	7-19-19	9-19-19	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2632	Starthony	7,500	Cont.	Cargo	9-10-19	1-20	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2633	Ossa	7,500	Cont.	Cargo	12-19	2-20	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2634	Otho	7,500	Cont.	Cargo	12-19	2-20	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2635	Padmsay	7,500	Cont.	Cargo	2-20	4-20	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2636	Pallas	7,500	Cont.	Cargo	2-20	4-20	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2637	Pansa	7,500	Cont.	Cargo	3-20	5-20	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
2638	Paphos	7,500	Cont.	Cargo	4-20	6-20	.....	2400 I	Coal & Oil	380-6 x 53-0	x 29-8
.....	Cascade	7,500	Req.	Cargo	12-21-18	5-31-19	10.50	2100 I	Coal	380-0 x 53-0	x 29-8

Great Lakes District Steel

American Shipbuilding Co., Cleveland

1586	Lake Grainger	4,200	Cont.	Cargo	1-23-19	4-23-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-4¼
1587	Lake Grana	4,200	Cont.	Cargo	2-15-19	5-22-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-4¼
1588	Lake G. amplan	4,200	Cont.	Cargo	3-1-19	5-15-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-4¼
1589	Lake G.ampus	4,200	Cont.	Cargo	3-15-19	5-29-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-4¼
1590	Lake Granby	4,200	Cont.	Cargo	4-5-19	6-21-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-4¼
1594	Lake Grattan	4,200	Cont.	Cargo	11-27-18	4-10-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1595	Lake Gravelle	4,200	Cont.	Cargo	12-7-18	4-10-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1597	Lake Gravity	4,200	Cont.	Cargo	12-24-18	4-14-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1598	Lake Greenbrier	4,200	Cont.	Cargo	1-9-19	4-14-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1599	Lake Gretna	4,200	Cont.	Cargo	1-16-19	4-18-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1600	Lake Grogan	4,200	Cont.	Cargo	1-20-19	4-18-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1601	Lake Florilla	4,200	Cont.	Cargo	1-30-19	4-22-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1602	Lake Flume	4,200	Cont.	Cargo	2-6-19	4-25-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1603	Lake Flushing	4,200	Cont.	Cargo	2-12-19	4-29-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1604	Lake Flynnus	4,200	Cont.	Cargo	2-15-19	4-29-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1605	Lake Folcroft	4,200	Cont.	Cargo	2-27-19	4-30-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1606	Lake Sapor	4,200	Cont.	Cargo	2-27-19	4-30-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1607	Lake Fonda	4,200	Cont.	Cargo	3-13-19	4-30-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1608	Lake Fontana	4,200	Cont.	Cargo	3-27-19	5-8-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1609	Lake Fontanet	4,200	Cont.	Cargo	3-19-19	5-17-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1610	Lake Fontanet	4,200	Cont.	Cargo	4-2-19	5-29-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1612	Lake Faresman	4,200	Cont.	Cargo	11-30-18	4-15-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1613	Lake Faristell	4,200	Cont.	Cargo	12-21-18	4-15-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1614	Lake Forkville	4,200	Cont.	Cargo	1-12-19	4-15-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1615	Lake Forney	4,200	Cont.	Cargo	2-15-19	4-15-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1616	Lake Forsby	4,200	Cont.	Cargo	3-8-19	5-10-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1619	Lake Fossil	4,200	Cont.	Cargo	12-7-18	4-14-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1620	Lake Foxboro	4,200	Cont.	Cargo	12-18-18	4-14-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1621	Lake Foxcraft	4,200	Cont.	Cargo	2-8-19	4-26-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1622	Lake Fraichur	4,200	Cont.	Cargo	3-15-19	5-12-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1624	Lake Fraley	4,200	Cont.	Cargo	11-4-18	4-19-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1625	Lake Francoula	4,200	Cont.	Cargo	11-16-18	4-19-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1626	Lake Fray	4,200	Cont.	Cargo	12-31-18	4-22-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1627	Lake France	4,200	Cont.	Cargo	12-21-18	4-22-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1628	Lake Frecks	4,200	Cont.	Cargo	12-7-18	4-26-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1629	Lake Freeborn	4,200	Cont.	Cargo	1-31-19	4-30-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1630	Lake Freed	4,200	Cont.	Cargo	1-18-19	4-30-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1631	Lake Freeland	4,200	Cont.	Cargo	2-8-19	4-30-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1632	Lake Freesout	4,200	Cont.	Cargo	3-1-19	5-3-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1633	Lake Frenchton	4,200	Cont.	Cargo	2-20-19	5-6-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1
1634	Lake Fresno	4,200	Cont.	Cargo	3-17-19	6-17-19	9.50	1250 I	Coal	251-0 x 43-6	x 28-2	24-1

1919 Construction Record of U.S. Yards

American Shipbuilding Co., Cleveland (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
1635	Lake Friar	4,200	Cont.	Cargo	3-25-19	6-21-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-1
1636	Lake Frio	4,200	Cont.	Cargo	4-14-19	6-28-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1637	Lake Frohma	4,200	Cont.	Cargo	4-14-19	7-8-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1638	Lake Frofona	4,200	Cont.	Cargo	5-1-19	7-16-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1639	Lake Fruzality	4,200	Cont.	Cargo	5-3-19	8-2-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1640	Lake Frumet	4,200	Cont.	Cargo	5-17-19	8-6-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1641	Lake Fugard	4,200	Cont.	Cargo	4-12-19	6-16-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1642	Lake Fuley	4,200	Cont.	Cargo	4-21-19	6-24-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1643	Lake Furlough	4,200	Cont.	Cargo	6-7-19	7-15-19	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	21-0
1777	Lake Geyser	4,050	Cont.	Cargo	11-15-19	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1778	Lake Giddings	4,050	Cont.	Cargo	11-15-19	2-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1779	Lake Gilboa	4,050	Cont.	Cargo	4-24-19	7-15-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1780	Lake Gilpen	4,050	Cont.	Cargo	4-29-19	8-1-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1781	Lake Gilta	4,050	Cont.	Cargo	5-20-19	8-21-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1782	Lake Giltedge	4,050	Cont.	Cargo	5-12-19	9-6-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1783	Lake Girth	4,050	Cont.	Cargo	6-14-19	9-27-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1784	Lake Gittano	4,050	Cont.	Cargo	5-28-19	9-16-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1785	Lake Glasco	4,050	Cont.	Cargo	6-14-19	10-7-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1796	Lake Ghabus	4,050	Cont.	Cargo	7-1-19	10-24-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1787	Lake Gabyan	4,200	Cont.	Cargo	6-28-19	10-17-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1788	Lake Gackler	4,200	Cont.	Cargo	7-15-19	1-12-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1789	Lake Gagundum	4,200	Cont.	Cargo	7-30-19	11-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1790	Lake Gairfax	4,200	Cont.	Cargo	7-23-19	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	21-0
1791	Lake Fairlie	4,200	Cont.	Cargo	7-30-19	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1792	Lake Inglenook	4,200	Cont.	Cargo	8-13-19	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1793	Lake Falport	4,200	Cont.	Cargo	10-7-19	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1794	Detroit-Wayne	4,200	Cont.	Cargo	11-8-19	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1795	McCreary County	4,200	Cont.	Cargo	.....	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1796	Vinton County	4,200	Cont.	Cargo	11-27-19	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1797	Hancock County	4,200	Cont.	Cargo	11-30-19	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1798	Lake Treba	4,200	Cont.	Cargo	12-19	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1799	Lake Falun	4,200	Cont.	Cargo	.....	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1800	Lake Tippah	4,200	Cont.	Cargo	.....	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	21-0
1801	Lake Fandango	4,200	Cont.	Cargo	.....	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1802	Lake Fandon	4,200	Cont.	Cargo	.....	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1803	Lake Fannin	4,200	Cont.	Cargo	4-5-19	6-25-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1804	Lake Farabee	4,200	Cont.	Cargo	4-29-19	7-21-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1805	Lake Farber	4,200	Cont.	Cargo	5-24-19	8-18-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1806	Lake Faribault	4,200	Cont.	Cargo	6-24-19	9-11-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1807	Lake Fariston	4,200	Cont.	Cargo	7-24-19	9-30-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1808	Lake Farley	4,200	Cont.	Cargo	8-11-19	10-20-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1809	Lake Farlin	4,200	Cont.	Cargo	4-9-19	6-25-19	9.50	1500 I	Coal	251-0 x 43-6 x 28-2	24-0
1810	Lake Farmingdale	4,200	Cont.	Cargo	4-30-19	7-23-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1811	Lake Farragut	4,200	Cont.	Cargo	5-20-19	8-15-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1812	Lake Farrar	4,200	Cont.	Cargo	6-16-19	9-12-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1813	Lake Stobi	4,200	Cont.	Cargo	7-16-19	9-30-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1814	Lake Palama	4,200	Cont.	Cargo	7-31-19	10-17-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1815	Lake Fanbush	4,200	Cont.	Cargo	6-9-19	9-6-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1816	Lake Faulk	4,200	Cont.	Cargo	6-26-19	9-24-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1817	Lake Fansdale	4,200	Cont.	Cargo	6-30-19	10-8-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1818	Lake Fanquier	4,200	Cont.	Cargo	7-16-19	10-18-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1819	Lake Favonia	4,200	Cont.	Cargo	7-23-19	10-28-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1820	Lake Faxon	4,200	Cont.	Cargo	8-14-19	11-6-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1821	Lake Felden	4,200	Cont.	Cargo	8-30-19	11-15-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1822	Ashland County	4,200	Cont.	Cargo	9-17-19	11-20-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1823	Henry County	4,200	Cont.	Cargo	10-18-19	2-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	21-0
1824	Franklin County	4,200	Cont.	Cargo	11-8-19	2-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1825	Lake Fenn	4,200	Cont.	Cargo	11-15-19	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1826	Lake Feodora	4,200	Cont.	Cargo	.....	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1827	Indiana Harbor	4,200	Cont.	Cargo	.....	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1828	Lake Fernalda	4,200	Cont.	Cargo	10-18-19	12-23-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1829	Lake Fernando	4,200	Cont.	Cargo	7-30-19	9-27-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1830	Lake Ferrona	4,200	Cont.	Cargo	9-13-19	10-31-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1831	Bartholomew	4,200	Cont.	Cargo	10-7-19	11-13-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0

Manitowoc Shipbuilding Co., Manitowoc, Wis.

1304	Coperns	3,400	Cont.	Cargo	11-2-18	4-18-19	10.00	1250 I	Coal	251-0 x 43-6 x 23-0	20-34
1305	Coquina	3,400	Cont.	Cargo	11-30-18	4-24-19	10.00	1250 I	Coal	251-0 x 43-6 x 23-0	20-34
1306	Coapeak	3,400	Cont.	Cargo	12-14-18	5-14-19	10.00	1250 I	Coal	251-0 x 43-6 x 23-0	20-34
1307	Corcoran	3,400	Cont.	Cargo	2-12-19	5-31-19	10.00	1250 I	Coal	251-0 x 43-6 x 23-0	20-34
1308	Pythou	3,400	Cont.	Cargo	12-31-18	4-30-19	10.00	1250 I	Coal	251-0 x 43-6 x 23-0	20-34
1309	Conuocopia	3,400	Cont.	Cargo	1-22-19	5-22-19	10.00	1250 I	Coal	251-0 x 43-6 x 23-0	20-34
1748	Lake Gadsden	4,050	Cont.	Cargo	6-10-19	9-15-19	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1749	Lake Onawa	4,050	Cont.	Cargo	7-2-19	10-28-19	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1750	Lake Sarus	4,050	Cont.	Cargo	5-21-19	9-29-19	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1751	Lake Galtier	4,050	Cont.	Cargo	6-11-19	11-8-19	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1752	Lake Galata	4,050	Cont.	Cargo	6-31-19	10-16-19	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1753	Lake Gilewood	4,050	Cont.	Cargo	7-30-19	11-22-19	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1754	Lake Gallen	4,050	Cont.	Cargo	9-24-19	11-25-19	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1755	Lake Galisteo	4,050	Cont.	Cargo	1-20	5-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1756	Lake Ikatan	4,050	Cont.	Cargo	11-5-19	2-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1757	Ripon	4,050	Cont.	Cargo	12-20-19	4-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1758	Wauwatosa	4,050	Cont.	Cargo	11-30-19	4-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
1759	Stout City	4,050	Cont.	Cargo	2-20	6-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....
2611	Lake Havest	4,050	Cont.	Cargo	3-20	6-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	.....

Saginaw Shipbuilding Co., Saginaw, Mich.

413	Lake Lileusum	3,500	Cont.	Cargo	11-27-18	4-21-19	10.00	1600 I	Coal	251-0 x 43-6 x 28-2	24-0
414	Lake Liroce	3,500	Cont.	Cargo	12-28-18	3-1-19	10.00	1600 I	Coal	251-0 x 43-6 x 28-2	24-0
1158	Lake Saba	3,500	Cont.	Cargo	3-1-19	5-9-19	10.00	1400 I	Coal	251-0 x 43-6 x 28-2	24-0
1159	Lake Canaveral	3,500	Cont.	Cargo	4-3-19	5-24-19	10.00	1400 I	Coal	251-0 x 43-6 x 28-2	24-0
1160	Lake Candelaria	3,500	Cont.	Cargo	5-5-19	7-25-19	10.00	1400 I	Coal	251-0 x 43-6 x 28-2	24-0
1161	Lake Cannonsburg	3,500	Cont.	Cargo	5-31-19	9-6-19	10.00	1400 I	Coal	251-0 x 43-6 x 28-2	24-0
1163	Lake Fear	3,500	Cont.	Cargo	7-19-19	10-7-19	10.00	1400 I	Coal	251-0 x 43-6 x 28-2	24-0

1919 Construction Record of U.S. Yards

Saginaw Shipbuilding Co., Saginaw, Mich. (Continued)

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
1163	Lake Girardeau	3,500	Cont.	Cargo	8-23-19	10-30-19	10.00	1400 I	Coal	251-0 x 43-6 x 24-2½	24-0
1760	Lake Ganado	4,050	Cont.	Cargo	12-1-19	4-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-4	....
1761	Lake Furnas	4,050	Cont.	Cargo	1-20	5-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-4	....
1762	El Mac	4,050	Cont.	Cargo	2-20	5-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-4	....
1763	Lake Gano	4,050	Cont.	Cargo	2-20	6-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-4	....
1764	Lake Gava	4,050	Cont.	Cargo	3-20	7-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-4	....
1765	Lake Gardau	4,050	Cont.	Cargo	4-20	7-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-4	....
1772	Lake Gazette	4,050	Cont.	Cargo	5-21-19	9-27-19	9.50	1400 I	Oil	251-0 x 43-6 x 28-2	24-0
1773	Lake Gebhart	4,050	Cont.	Cargo	6-7-19	10-14-19	9.50	1400 I	Oil	251-0 x 43-6 x 28-2	24-0
1774	Lake Gera	4,050	Cont.	Cargo	7-10-19	11-11-19	9.50	1400 I	Oil	251-0 x 43-6 x 28-2	24-0
1775	Lake Gert	4,050	Cont.	Cargo	10-11-19	4-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-2	24-0
1776	Lake Getaway	4,050	Cont.	Cargo	10-18-19	4-20	9.50	1400 I	Oil	251-0 x 43-6 x 28-2	24-0

Toledo Shipbuilding Co., Toledo, O.

1104	Lake Strabo	3,500	Cont.	Cargo	12-21-18	3-15-19	10.00	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1105	Lake Chautauville	3,500	Cont.	Cargo	1 25-19	3-28-19	10.00	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1106	Lake Calvenia	3,500	Cont.	Cargo	2-15-19	4-10-19	10.00	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1832	Lake Festina	4,050	Cont.	Cargo	4-5-19	6-30-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1833	Lake Festus	4,050	Cont.	Cargo	5-3-19	7-25-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1834	Lake Fibre	4,050	Cont.	Cargo	6-7-19	8-30-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1835	Lake Fielding	4,050	Cont.	Cargo	7-12-19	9-13-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1836	Lake Fife	4,050	Cont.	Cargo	8-13-19	10-3-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1837	Lake Figart	4,050	Cont.	Cargo	8-30-19	10-18-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1838	Lake Fighting	4,050	Cont.	Cargo	9-27-19	11-8-19	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1839	Lake Filbert	4,050	Cont.	Cargo	10-11-19	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1840	Lake Filion	4,050	Cont.	Cargo	11-1-19	.....	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1841	Lake Fillmore	4,050	Cont.	Cargo	12-15-19	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1842	Rushville	4,050	Cont.	Cargo	1-20	4-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1843	Union Liberty	4,050	Cont.	Cargo	2-20	5-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0
1844	Pulaski	4,050	Cont.	Cargo	3-20	7-20	9.50	1500 I	Oil	251-0 x 43-6 x 28-2	24-0

Globe Shipbuilding Co., Superior, Wis.

1224	Cassien	3,500	Cont.	Cargo	11-16-18	1-31-19	10.00	1250 I	Coal	251-0 x 43-6 x 24-2½	24-0
1225	Catoocook	3,500	Cont.	Cargo	10-18-18	11-23-18	10.00	1250 I	Coal	251-0 x 43-6 x 24-2½	24-0
1226	Procter	3,500	Cont.	Cargo	12-11-18	6-21-19	10.00	1250 I	Coal	251-0 x 43-6 x 24-2½	24-0
1227	Copalgrove	3,500	Cont.	Cargo	1-29-19	5-29-19	10.00	1250 I	Coal	251-0 x 43-6 x 24-2½	24-0
1576	Lake Globe	3,500	Cont.	Cargo	.....	.....	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1577	Lake Glencoe	3,500	Cont.	Cargo	.....	.....	9.50	1250 I	Coal	251-0 x 43-6 x 28-2	24-0
1848	Lake Glencoe	4,050	Cont.	Cargo	6-28-19	9-23-19	9.50	1350 I	Oil	253-6 x 43-8 x 26-4	....
1849	Lake Fisher	4,050	Cont.	Cargo	7-22-19	10-18-19	9.50	1350 I	Oil	253-6 x 43-8 x 26-4	....
1850	Lake Fitch	4,050	Cont.	Cargo	8-16-19	11-6-19	9.50	1350 I	Oil	253-6 x 43-8 x 26-4	....
1851	Lake Fithian	4,050	Cont.	Cargo	9-11-19	12-20-19	9.50	1350 I	Oil	253-6 x 43-8 x 26-4	....
1852	Lake Flag	4,050	Cont.	Cargo	10-9-19	4-20	9.50	1350 I	Oil	253-6 x 43-8 x 26-4	....
2352	Lake Glencoe	4,050	Cont.	Cargo	11-15-19	4-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	24-0
2353	Lake Glencoe	4,050	Cont.	Cargo	12-1-19	4-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	24-0
2354	Lake Harbina	4,050	Cont.	Cargo	1-20	4-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	24-0
2355	Lake Hector	4,050	Cont.	Cargo	2-20	4-20	9.50	1500 I	Oil	253-6 x 43-8 x 28-4	24-0

Great Lakes Engineering Works, Detroit, Mich.

1260	Cottonplant	4,200	Cont.	Cargo	1-20-19	3-24-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1261	Cottonwood	4,200	Cont.	Cargo	12-10-18	1 16-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1262	Coulee	4,200	Cont.	Cargo	1-10-19	2-13-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1263	Council Bluffs	4,200	Cont.	Cargo	12-27-18	2-1-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1264	Couparle	4,200	Cont.	Cargo	2-11-19	3-21-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1265	Courtels	4,200	Cont.	Cargo	2-1-19	3-15-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1266	Coumbatta	4,200	Cont.	Cargo	2-21-19	4-4-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1267	Coutolene	4,200	Cont.	Cargo	3-21-19	4-22-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1268	Covall	4,200	Cont.	Cargo	3-10-19	4-17-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1269	Coredale	4,200	Cont.	Cargo	4-19-19	5-20-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1270	Covara	4,200	Cont.	Cargo	3-28-19	4-30-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1271	Cove Run	4,200	Cont.	Cargo	4-27-19	5-29-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1272	Cowan	4,200	Cont.	Cargo	4-9-19	5-13-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1273	Cowan Shamrock	4,200	Cont.	Cargo	11-30-18	2-28-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1274	Cowboy	4,200	Cont.	Cargo	12-30-18	3-29-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1275	Cowee	4,200	Cont.	Cargo	2-1-19	4-29-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1276	Cowiche	4,200	Cont.	Cargo	3-8-19	5-8-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1277	Croftree	4,200	Cont.	Cargo	4-30-19	6-17-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1278	Craig Rowles	4,200	Cont.	Cargo	4-12-19	5-27-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1279	Crakamee	4,200	Cont.	Cargo	5-24-19	7-3-19	9.50	1350 I	Coal	253-0 x 43-6 x 27-6	23-7
1868	Lake Elkwood	4,050	Cont.	Cargo	5-20-19	7-9-19	9.50	1350 I	Oil	253-0 x 43-6 x 27-6	23-7
1869	Lake Elkwood	4,050	Cont.	Cargo	6-10-19	3-1-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1870	Lake Ellendale	4,050	Cont.	Cargo	7-26-19	9-5-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1871	Lake Ellendorah	4,050	Cont.	Cargo	6-30-19	8-27-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1872	Lake Ellerslie	4,050	Cont.	Cargo	8-8-19	9-23-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1873	Lake Elliott	4,050	Cont.	Cargo	8-16-19	10-4-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1874	Lake Elliott	4,050	Cont.	Cargo	8-23-19	10-17-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1875	Lake Ellithorpe	4,050	Cont.	Cargo	8-28-19	11-5-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1876	Lake Ellsworth	4,050	Cont.	Cargo	9-12-19	10-28-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1877	Lake Ellsbury	4,050	Cont.	Cargo	9-24-19	11-15-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1878	Lake Ellsford	4,050	Cont.	Cargo	10-2-19	11-25-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1879	Lake Ellmhurst	4,050	Cont.	Cargo	9-30-19	10-19-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1880	Lake Elmont	4,050	Cont.	Cargo	11-15-19	1-20	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1881	Lake Elmo	4,050	Cont.	Cargo	11-22-19	1-20	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1882	Lake Elmwood	4,050	Cont.	Cargo	12-6-19	3-20	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1883	Lake Elmwood	4,050	Cont.	Cargo	12-15-19	4-20	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1884	Lake Elmore	4,050	Cont.	Cargo	7-19-19	8-26-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1885	Lake Elton	4,050	Cont.	Cargo	8-20-19	9-24-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1886	Lake Elpueblo	4,050	Cont.	Cargo	9-15-19	10-13-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1887	Lake El Rio	4,050	Cont.	Cargo	10-17-19	10-31-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1888	Lake Elsie	4,050	Cont.	Cargo	11-15-19	4-20	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1889	Lake Elsmere	4,050	Cont.	Cargo	11-3-19	11-18-19	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1890	Lake Elva	4,050	Cont.	Cargo	11-15-19	4-20	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0
1891	Lake Elwin	4,050	Cont.	Cargo	1-20	4-20	9.50	1350 I	Oil	253-6 x 43-8 x 28-4	24-0

1919 Construction Record of U.S. Yards

McDougall-Duluth Co., Duluth

Hull No.	Name	Dead-weight tonnage	Contract or regulated	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches			Draft ft. in.
1328	Ceraivo	3,500	Cont.	Cargo	10-23-18	4-15-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1329	Ceasco	3,500	Cont.	Cargo	11-14-18	4-26-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1330	Cerro Gando	3,500	Cont.	Cargo	12-14-18	5-24-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1331	Chamberino	3,500	Cont.	Cargo	12-21-18	6-24-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1332	Chamblee	3,500	Cont.	Cargo	3-13-19	5-6-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1333	Chaparel	3,500	Cont.	Cargo	4-19-19	6-30-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1334	Chautier	3,500	Cont.	Cargo	5-1-19	7-11-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1335	Chippell	3,500	Cont.	Cargo	3-5-19	5-15-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1336	Chautauqua	3,500	Cont.	Cargo	4-5-19	6-12-19	10.00	1250 I	Coal	251-0	x 43-6	x 28-2	24-0
1853	Lake Flagon	4,050	Cont.	Cargo	6-9-19	9-18-19	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1854	Lake Flagstaff	4,050	Cont.	Cargo	6-23-19	10-3-19	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1855	Lake Flambeau	4,050	Cont.	Cargo	7-3-19	10-11-19	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1856	Lake Flanders	4,050	Cont.	Cargo	7-10-19	10-20-19	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1857	Lake Flatonia	4,050	Cont.	Cargo	7-19-19	10-25-19	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1858	Lake Flattery	4,050	Cont.	Cargo	7-31-19	11-10-19	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1859	Lake Stymon	4,050	Cont.	Cargo	8-30-19	.....	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1860	La Crosse	4,050	Cont.	Cargo	8-20-19	.....	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1861	Fargo	4,050	Cont.	Cargo	9-30-19	.....	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1862	Sioux Falls	4,050	Cont.	Cargo	10-4-19	4-20	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1863	Great Falls	4,050	Cont.	Cargo	10-11-19	4-20	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	....
1864	Lake Floravista	4,050	Cont.	Cargo	10-23-19	4-20	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	24-0
1865	Lake Florian	4,050	Cont.	Cargo	11-11-19	4-20	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	24-0
1866	Lake Floris	4,050	Cont.	Cargo	11-15-19	4-20	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	24-0
1867	Lake Flournoy	4,050	Cont.	Cargo	2-20	5-20	9.50	1500 I	Oil	251-0	x 43-6	x 28-2	24-0

Northwest Engineering Works, Green Bay, Wis.

1343	Co-kamono	100	Cont.	Tug	10-10-18	6-10-19	.....	400 I	Coal	95-5	x 24-0	x 12-9	11-0	
1344	Cocheco	100	Cont.	Tug	9-25-18	6-19-19	.....	400 I	Coal	95-5	x 24-0	x 12-9	11-0	
2065	Vallonia	150	Seagoing	Cont.	Tug	7-12-19	4-20	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-6
2066	Moosiatuke	150	Seagoing	Cont.	Tug	5-17-19	4-20	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-6
2067	Toonpi	150	Seagoing	Cont.	Tug	4-4-19	4-20	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-6
2068	Menominee	150	Seagoing	Cont.	Tug	3-4-19	11-30-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-6
2069	Outagamie	150	Seagoing	Cont.	Tug	8-30-19	4-20	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-6
2070	Pyles	150	Seagoing	Cont.	Tug	10-11-19	4-20	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-6

Whitney Bros. Co., Superior, Wis.

1442	Huckey	150-0	Seagoing	Cont.	Tug	1-15-19	6-10-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
1443	Hulver	150-0	Seagoing	Cont.	Tug	2-5-19	7-10-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
1444	Humacoma	150-0	Seagoing	Cont.	Tug	2-27-19	7-15-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
1445	Humrick	150-0	Seagoing	Cont.	Tug	3-23-19	8-14-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
2039	Kashena	150-0	Seagoing	Cont.	Tug	5-24-19	9-23-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
2040	Klokee	150-0	Seagoing	Cont.	Tug	7-19-19	10-10-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
2041	Kiron	150-0	Seagoing	Cont.	Tug	6-3-19	10-21-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
2042	Kitchi	150-0	Seagoing	Cont.	Tug	6-14-19	11-4-19	.....	806 I	Coal	141-3½	x 27-6	x 16-8	14-0
2043	Kolda	150-0	Seagoing	Cont.	Tug	8-2-19	11-20-15	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0
2044	Kaleen	150-0	Seagoing	Cont.	Tug	8-19-19	12-19	.....	800 I	Coal	141-3½	x 27-6	x 16-8	14-0

Japan and China District

Uraga Senkyo Kabushiki Kaisha, Uraga, Japan

2008	Eastern Sword	5,500	Cont.	Cargo	3-20	4-20	12.00	2500 I	Coal	330-0	x 46-0	x 30-0	24-0
2025	Eastern Breeze	6,650	Cont.	Cargo	8-26-19	12-19	12.00	2800 I	Coal	360-0	x 51-0	x 28-3	23-1
2026	Eastern Gale	6,650	Cont.	Cargo	10-11-19	12-19	12.00	2800 I	Coal	360-0	x 51-0	x 28-3	23-1
2027	Eastern Tempest	6,650	Cont.	Cargo	1-20	3-20	12.00	2800 I	Coal	360-0	x 51-0	x 28-3	23-1

Fujinigata Zosensho, Osaka, Japan

2009	Eastern Leader	6,300	Cont.	Cargo	2-20	5-20	10.50	2800 I	Coal	345-0	x 50-0	x 29-1	23-11
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Kabushiki Kaisha Harima Zosensho, Oioi, Japan

2010	Eastern Soldier	10,500	Cont.	Cargo	3-20	4-20	13.00	3200 I	Coal	425-0	x 53-8	x 29-0	28-6
2011	Eastern Pilot	5,000	Cont.	Cargo	11-19	1-20	10.50	2100 I	Coal	305-0	x 43-9	x 27-3	23-3

Kabushikiki Kaisha Tokio, Ishikawajima Zosensho, Tokio, Japan

2012	Eastern Belle	5,000	Cont.	Cargo	10-23-19	1-20	10.50	2100 I	Coal	305-0	x 43-9	x 27-3	23-0
2013	Eastern Maid	5,000	Cont.	Cargo	12-19	2-20	10.50	2100 I	Coal	305-0	x 43-9	x 27-3	23-0

Kawasaki, Kobe, Japan

2014	Eastern Moon	9,000	Cont.	Cargo	11- 6-19	12-19	10.50	3000 I	Coal	385-0	x 51-0	x 28-0	27-1
2015	Eastern Ocean	9,000	Cont.	Cargo	12-19	1-20	10.50	3000 I	Coal	385-0	x 51-0	x 28-0	27-1
2016	Eastern Planet	9,000	Cont.	Cargo	1-20	3-20	10.50	3000 I	Coal	385-0	x 51-0	x 28-0	27-1
2017	Eastern Dawn	9,000	Cont.	Cargo	2-20	4-20	10.50	3000 I	Coal	385-0	x 51-0	x 28-0	27-1
2018	Eastern Cloud	9,000	Cont.	Cargo	3-20	5-20	10.50	3000 I	Coal	385-0	x 51-0	x 28-0	27-1

1919 Construction Record of U.S. Yards

Nitta Kisen Kabushiki Kaisha, Osaka, Japan

Hull No.	Name	Dead-weight tonnage	Contract or requisitioned	Type	Date launched actual or estimated	Date delivered actual or estimated	Speed, knots	H. P., shaft or indicated	Fuel	Length between perpendiculars, Beam molded, Depth molded, feet, inches	Draft ft. in.
2019	Eastern Temple	5,500	Cont.	Cargo	11-19	1-20	10.50	2500 I	Coal	316-0 x 45-8 x 28-10	23-3

Yokohama Senkyo Kabushiki Kaisha, Yokohama, Japan

2020	Eastern Guide	6,300	Cont.	Cargo	9- 6-19	12-19	10.50	2300 I	Coal	345-0 x 50-0 x 29-1	23-11
2021	Eastern Crag	6,300	Cont.	Cargo	10-15-19	1-20	10.50	2300 I	Coal	345-0 x 50-0 x 29-1	23-11
2022	Eastern Coast	6,300	Cont.	Cargo	12-19	2-20	10.50	2300 I	Coal	345-0 x 50-0 x 29-1	23-11

Kabushiki Kaisha Asano Zosensho, Tsurumi, Japan

2023	Eastern Merchant	12,600	Cont.	Cargo	10- 6-19	12-19	10.50	2100 I	Coal	445-0 x 28-0 x 32-0	30-5
2024	Eastern Trader	12,600	Cont.	Cargo	11- 4-19	1-20	10.50	2100 I	Coal	445-0 x 28-0 x 32-0	30-5

Mitsue Bussan Kabushiki Kaisha, Okayama, Japan

2028	Eastern Importer	9,000	Cont.	Cargo	11-19	12-19	10.00	3000 I	Coal	385-0 x 51-0 x 28-0	28-0
2029	Eastern Exporter	9,000	Cont.	Cargo	12-19	1-20	10.00	3000 I	Coal	385-0 x 51-0 x 28-0	28-0

Mitsubishi Zosen Kaisha, Nagasaki, Japan

2030	Eastern Crown	8,360	Cont.	Cargo	11-19	2-20	10.00	3200 I	Coal	400-0 x 54-6 x 30-0	24-6
2031	Eastern Victor	8,360	Cont.	Cargo	1-20	2-20	10.00	3200 I	Coal	400-0 x 54-6 x 30-0	24-6

Kabushiki Kaisha Uchida Zosensho, Kawasaki, Japan

2032	Eastern Glade	8,360	Cont.	Cargo	11- 5-19	1-20	10.50	3000 I	Coal	400-0 x 54-6 x 30-0	24-6
2033	Eastern Glen	8,360	Cont.	Cargo	12-19	2-20	10.50	3000 I	Coal	400-0 x 54-6 x 30-0	24-6

Kabushiki Kaisha Osaka Tekko-Sho, Osaka, Japan

2034	Eastern Knight	10,000	Cont.	Cargo	10-13-19	12-19	10.50	3200 I	Coal	415-0 x 55-6 x 34-8	....
2035	Eastern Mariner	10,000	Cont.	Cargo	11-19	1-20	10.50	3200 I	Coal	415-0 x 55-6 x 34-8	....
2036	Eastern Admiral	10,000	Cont.	Cargo	12-19	2-20	10.50	3200 I	Coal	415-0 x 55-6 x 34-8	....
2037	Eastern Sailor	10,000	Cont.	Cargo	2-20	3-20	10.50	3200 I	Coal	415-0 x 55-6 x 34-8	....

Kiangnan Dock & Engineering Wks., Shanghai, China

2083	Mandarin	10,000	Cont.	Cargo	12-19	2-20	10.50	3000 I	Oil	425-0 x 55-0 x 30-0	27-6
2084	Celestial	10,000	Cont.	Cargo	12-19	2-20	10.50	3000 I	Oil	425-0 x 55-0 x 30-0	27-6
2085	Oriental	10,000	Cont.	Cargo	1-20	3-20	10.50	3000 I	Oil	425-0 x 55-0 x 30-0	27-6
2086	Cathay	10,000	Cont.	Cargo	1-20	3-20	10.50	3000 I	Oil	425-0 x 55-0 x 30-0	27-6

Composite

Merrill-Stevens Shipbuilding Corp., Jacksonville, Fla.

3	Kanabec	3,500	Cont.	McClelland	8-24-18	12-31-18	10.00	1400 I	Coal	270-0 x 45-0 x 24-3
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Merrill-Stevens Shipbuilding Corp., Slidell, La.

5	Buckhammon	3,500	Cont.	McClelland	11-10-18	6-11-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3
6	Campello	3,500	Cont.	McClelland	2-20-19	8-26-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....

Mobile Shipbuilding Co., Mobile, Ala.

311	Balesaro	3,500	Cont.	McClelland	11-10-18	1-30-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
313	Dalgada	3,500	Cont.	McClelland	11-30-18	2-24-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
314	Obak	3,500	Cont.	McClelland	2-25-19	4- 2-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
315	Oyaka	3,500	Cont.	McClelland	4- 5-19	5-17-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....

Terry Shipbuilding Co., Savannah, Ga.

63	Quinnesecco	3,500	Cont.	McClelland	6- 5-18	9-15-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
64	Oglethorpe	3,500	Cont.	McClelland	7- 4-18	10-14-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
65	Baganito	3,500	Cont.	McClelland	9- 4-18	8- 6-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
66	Borad	3,500	Cont.	McClelland	9-28-18	8- 6-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
67	Batonville	3,500	Cont.	McClelland	4-29-19	8-22-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....
68	Tuwetanka	3,500	Cont.	McClelland	6- 5-18	9-15-19	10.00	1400 I	Coal	270-0 x 45-0 x 24-3	....

Concrete

Fougnier Shipbuilding Co., Flushing, L. I., New York

1189	Polias	3,500	Cont.	Cargo	5-22-19	10-23-19	10.50	1400 I	Coal	268-5 x 46-5 x 26-6	22-4½
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Liberty Shipbuilding Co., Brunswick, Ga.

997	Atlantus	3,000	Cont.	Cargo	12-4-18	11-25-19	10.50	1400 I	Oil	250-0 x 43-6 x 26-9	27-6
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Liberty Shipbuilding Co., Wilmington, N. C.

1562	Old North State	3,500	Cont.	Cargo	10-11-19	1-20	10.50	1400 I	Coal	268-5 x 46-0 x 28-3	24-0
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A. Bentley & Sons Co., Jacksonville, Fla.

1707	Dismore	7,500	Cont.	Tanker	12-19	3-20	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0
1708	Moffitt	7,500	Cont.	Tanker	1-20	4-20	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0

Fred T. Ley & Co., Inc., Mobile, Ala.

1715	Latham	7,500	Cont.	Tanker	8-9-19	1-20	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0
1716	Selma	7,500	Cont.	Tanker	6-28-19	1-20	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0

San Francisco Shipbuilding Co., Oakland Bay, Cal.

1662	Peralta	7,500	Cont.	Tanker	12-1-19	3-20	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0
1663	Palo Alto	7,500	Cont.	Tanker	5-29-19	12-19	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0

Pacific Marine & Construction Co., San Diego, Cal.

1723	Cuyamaco	7,500	Cont.	Tanker	1-20	4-20	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0
1724	San Pasqual	7,500	Cont.	Tanker	2-20	5-20	10.50	2800 I	Oil	420-0 x 54-0 x 36-0	26-0

(Concluded in March Issue)

Equips Steel Shipyard In South

Modern Equipment and Adequate Housing Facilities for Workers Feature
New Yard Established Near Mobile, Ala. — Yard Contains Six Berths

THAT the shipbuilding industry in the South is to be permanent is evidenced by the new plant of the Chickasaw Shipbuilding Co., near Mobile, Ala. Steady production is further assured by the fact that most of the material used in this yard is rolled at the Fairfield works of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., both concerns being subsidiaries of the United States Steel Corp. The Fairfield works fabricate about 75 per cent of this material, the remaining 25 per cent being fabricated at the shipyard.

The shipbuilding plant is about five miles north of Mobile and has an easterly frontage on Chickasaw bogue, a tributary of the Mobile river. As there was no village near the point chosen for this plant, it was necessary to build villages for the white and colored employees. A street railway line, connecting with the Mobile system at Pritchard, was built to afford a means of travel between Mobile and Chickasaw. The village for the white laborers was built on one side of the car line and the village for

colored people was built on the side of the tracks nearest to the yard.

The shipbuilding plant consists of six berths arranged two each on the north side of basins Nos. 1 and 2, and two on the south side of basin No. 1. Basin No. 1 is 150 feet wide by about 1000 feet long, and basin No. 2 is 200 feet wide by about 1000 feet long, both being designed for side launching.

Crane for Each Berth

The shipways are commanded by gantry cranes, one being provided for each berth. These cranes are of a special design, having two 10-ton locomotive cranes mounted on the bridges, enabling them to handle material from barges in the basins, from incoming cars, or from the stockyard alongside each berth directly to the ship. These cranes are illustrated in Figs. 1 and 3. As previously noted, all fabricated material ready to enter into the ship construction is delivered to the shipways underneath these cranes, where it is unloaded and either placed directly in the ship or in a space provided for storage until such

time as it is needed. Materials which require additional fabrication are delivered to the plate shop, located at the west end of the shipways.

Each of the two main aisles of the plate fabricating shop is 80 x 400 feet, and is served by a 15-ton overhead traveling crane. On the west side of the building is a receiving crane runway 85 feet wide by 400 feet long, and on the east side is a shipping crane runway of the same dimensions. Each runway is served by a 10-ton crane. The shop equipment, including punches, plate planers, angle and plate heating furnaces, bending slabs, shears, etc., is in the main aisle of the building.

Adjacent to the plate shop at the north end there is a 61.5 x 300-foot template shop which is used for laying down certain portions of the ship on the floor and getting out the necessary templates to be used in the shop for fabrication of material. On the south side of basin No. 1 there is a power station of brick and steel construction. The equipment consists of two 4000-kilowatt, 60-cycle, turbo-generators, complete with condensing apparatus, and three large air compressors and the necessary auxiliary machinery.

The boiler plant consists of four 750-horsepower water tube boilers, de-

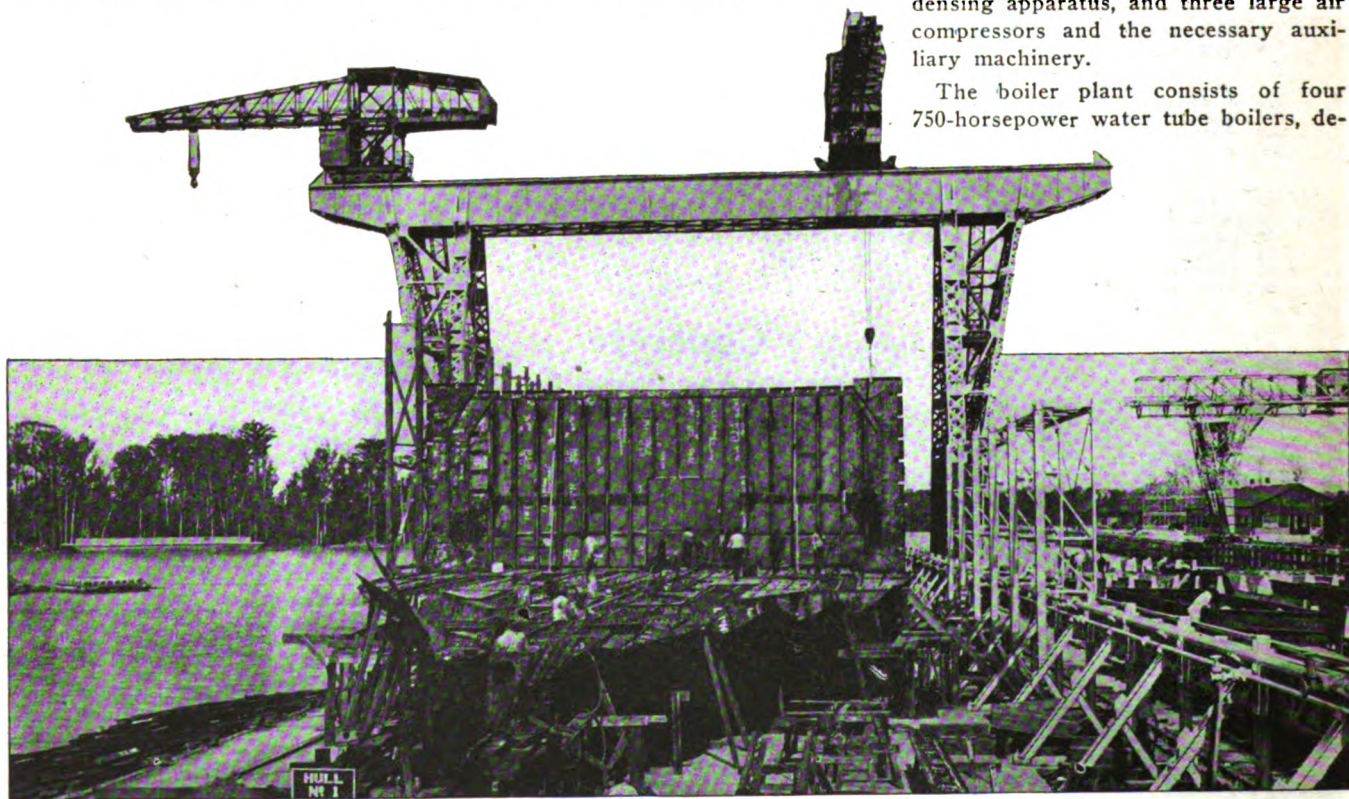


FIG. 1—VIEW OF ONE OF THE SIX BERTHS AT THE PLANT OF THE CHICKASAW SHIPBUILDING CO.—FABRICATED WORK MAY BE LIFTED FROM BARGES AND SWUNG INTO PLACE BY THE GANTRY CRANES IN ONE LIFT

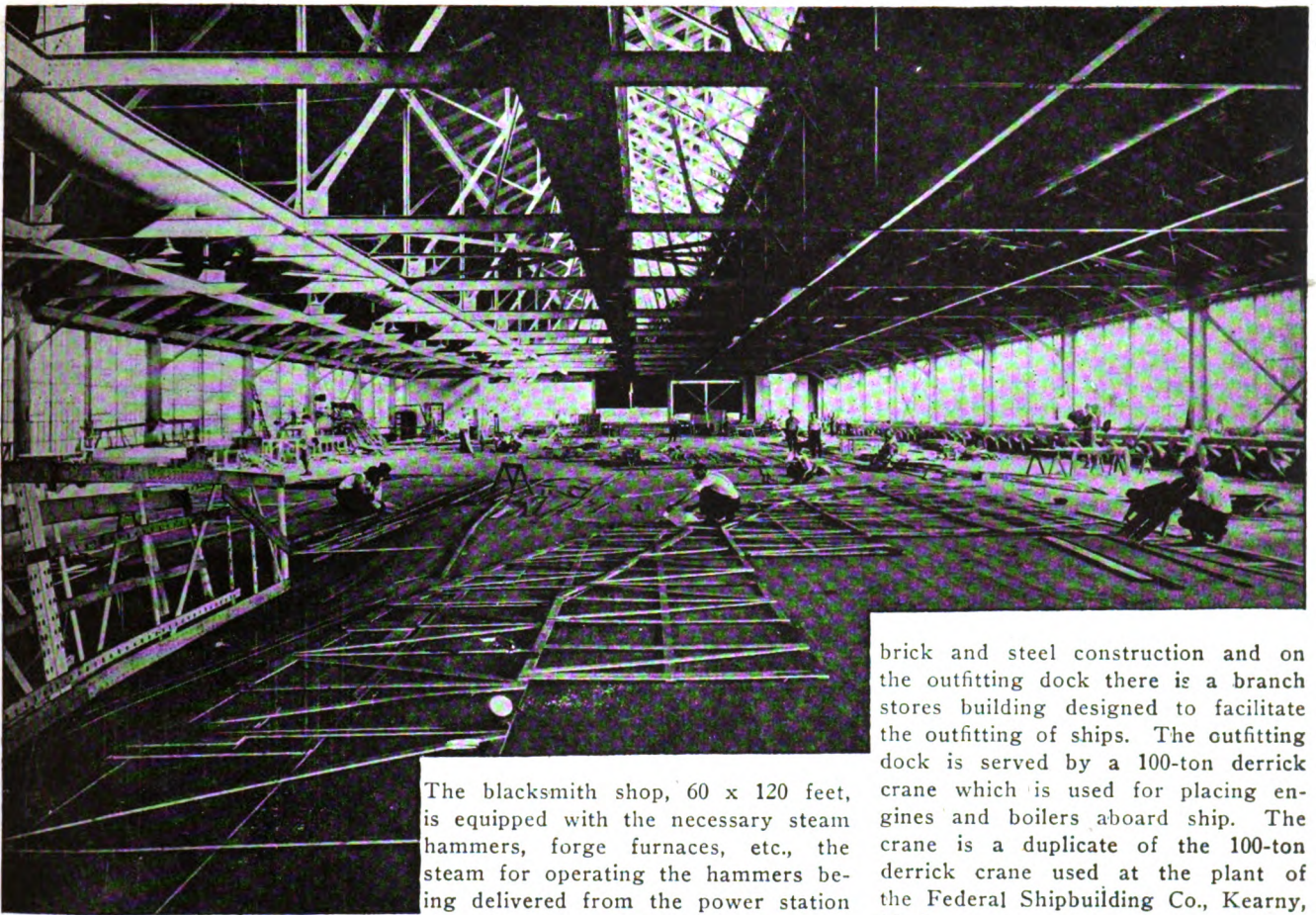


FIG. 2—VIEW IN THE MOLD LOFT

signed to furnish superheated steam for the operation of the turbo-generators and air compressors. These boilers are equipped with stokers and the necessary pumps and auxiliary machinery. Water for the condensing purposes is taken from basin No. 1 through an intake tunnel and the discharge from the condensers is returned to basin No. 2.

The coal for operating the station is delivered in river barges to a coal unloading dock, commanded by a coal unloading and storing bridge, which delivers the coal into a storage pile. The coal is carried from the storage pile by an incline belt conveyor to a 2200-ton bin in one end of the boiler house. The coal is delivered to the fire room stokers by means of an electrically driven coal larry.

The blacksmith shop, 60 x 120 feet, is equipped with the necessary steam hammers, forge furnaces, etc., the steam for operating the hammers being delivered from the power station through an overhead pipe line. The machine shop, situated east of the blacksmith shop, is 120 feet wide and 240 feet long and is equipped with modern machines. All machine tools are served by means of overhead electric cranes. Other units of the shipbuilding plant include a carpenter shop, rigger shop, sheet metal shop and paint shop.

West of basin No. 1 is a main stores building, 60 x 300 feet, and of

brick and steel construction and on the outfitting dock there is a branch stores building designed to facilitate the outfitting of ships. The outfitting dock is served by a 100-ton derrick crane which is used for placing engines and boilers aboard ship. The crane is a duplicate of the 100-ton derrick crane used at the plant of the Federal Shipbuilding Co., Kearny, N. J.

The shipways are designed for side launching and permanent staging of steel construction is employed. The



FIG. 3—STEEL CARGO VESSEL OF 9600 TONS TAKING SHAPE ON THE WAYS AT THE CHICKASAW SHIPBUILDING CO.

temporary staging on the launching side is also of steel, but is designed so that it can be taken down or put up in sections in accordance with requirements. Facilities for welding and cutting are provided by an acetylene gas generator of the low pressure type. The gas is piped along the shipways where convenient outlets have been provided. Acetylene burners or welding apparatus may be quickly connected to these outlets, thus enabling workmen to use the equipment at practically any part of the shipyard. A refrigerating machine in the basement of the power house pumps cold drinking water through a continuous system of piping to all shops, buildings and shipways of the plant, insuring the workers a good supply of cold water.

Millions in Ship Firms

Organization during 1919 of shipping and shipbuilding companies with an aggregate invested capital of \$323,613,500 is reported by the *Journal of Commerce*, New York. This figure compares with \$120,353,000 in 1918 and \$271,503,000 in 1917.

The full significance of last year's total indicated investment is best shown by comparison with the aggregate authorized capital of companies organized during the period extending from Aug. 1, 1914, to Dec. 31, 1918, which amounted to \$500,828,000. The 1919 total was about 65 per cent of the aggregate for that period. The figures follow:

Five months, 1914.....	\$ 1,844,000
Year 1915.....	37,662,000
Year 1916.....	69,466,000
Year 1917.....	271,503,000
Year 1918.....	120,353,000
Year 1919.....	323,613,500
Total	\$824,441,500

The compilation upon which the above tabulation is based includes only those companies with an authorized capital of \$50,000 or greater.

How shipbuilding investments compared with shipping enterprises are shown in the following:

	Shipbuilding	Other Shipping
1917		
January	\$ 225,000	\$ 2,250,000
February	18,050,000	12,475,000
March	3,125,000	9,750,000
April	15,500,000	13,895,000
May	42,840,000	4,650,000
June	75,525,000	8,500,000
July	11,700,000	7,280,000
August	11,085,000	7,943,000
September	3,850,000	1,250,000
October	7,200,000	2,450,000
November	3,600,000	1,250,000
December	5,650,000	1,310,000
Total	\$198,350,000	\$73,003,000
1918—		
January	\$6,650,000	\$14,624,000
February	1,050,000	4,280,000

March	4,050,000	4,850,000
April	3,950,000	3,945,000
May	8,350,000	300,000
June	1,675,000	325,000
July	6,075,000	4,655,000
August	3,625,000	7,575,000
September	5,250,000	25,629,000
October	600,000	2,075,000
November	500,000	550,000
December	3,000,000	6,870,000

Total **\$44,675,000** **\$75,688,000**

1919—		
January	\$5,390,000	\$2,435,000
February		6,400,000
March	4,500,000	4,776,000
April	1,000,000	1,400,000
May	600,000	16,600,000
June	150,000	55,400,000
July	2,850,000	39,635,000
August	4,000,000	51,950,000
September	5,750,000	35,120,000
October	5,155,000	18,250,000
November	500,000	52,200,000
December	2,000,000	8,362,500

Total **\$31,895,000** **\$292,528,500**
Grand total **\$274,920,000** **\$441,219,500**

Following is a list of the companies organized during December:

DECEMBER, 1919

Atlantic Marine & Com. Co., Del.....	\$2,000,000
Boston Maritime Corp., The, Me.....	2,000,000
Crescent Navigation Co., Del.....	500,000
Cuban American S. S. Corp., Del.....	1,300,000
Harbor Service Corp., The, Del.....	100,000
Inter-Colonial Steamship & Trading Co., Del.....	100,000
Kennebec Navigation Co., Me.....	200,000
Lloyd Italo-American Steamship Co., Del.....	1,000,000
O'Kane Line, Inc., Del.....	1,500,000
Port Elizabeth Navigation Corp., Del.....	512,500
Robin Line Steamship Co., Cal.....	1,000,000
Sun Steamship Co., Del. (own and operate)	50,000
S. O. Stray Steamship Corp., Del.....	100,000

Total **\$10,362,500**

The month-by-month development of new shipbuilding and shipping enterprises since the beginning of the war is shown below:

1914—			
August.....	\$1,125,000	November	\$100,000
September.....	519,000	December	100,000
October.....	None		
Total			<u>\$1,844,000</u>

1915—			
January.....	\$1,975,000	July	\$10,450,000
February.....	803,000	August	4,530,000
March.....	825,000	September..	2,919,000
April.....	1,485,000	October	2,005,000
May.....	4,845,000	November	5,900,000
June.....	350,000	December	1,575,000
Total	\$37,662,000		

1916—			
January.....	5,780,000	December..	7,350,000
February.....	\$4,850,000	July	\$1,425,000
March.....	5,525,000	August	8,925,000
April.....	12,155,000	September..	1,325,000
May.....	4,234,000	October	6,815,000
June.....	2,725,000	November..	8,357,000
Total	\$69,466,000		

1917—			
January.....	\$2,475,000	July	\$19,020,000
February.....	30,525,000	August	19,038,000
March.....	12,975,000	September..	5,100,000
April.....	29,395,000	October.....	9,650,000
May.....	47,490,000	November..	4,850,000
June.....	84,025,000	December..	6,060,000
Total	\$271,503,000		

1918—			
January.....	\$21,274,000	July	\$10,730,000
February.....	5,330,000	August ..	11,200,000
March.....	8,900,000	September	30,879,000
April.....	7,895,000	October...	2,675,000
May.....	8,650,000	November..	1,050,000
June.....	1,900,000	December..	9,870,000

Total **\$120,353,000**

1919—			
January.....	\$7,525,000	July	\$42,485,000
February.....	6,400,000	August ..	55,950,000
March.....	9,276,000	September	40,870,000
April.....	2,400,000	October..	23,405,000
May.....	17,200,000	November..	52,700,000
June.....	55,550,000	December..	10,362,500

Total **\$323,613,500**

Doubles British Output

During a recent visit to the United States, Sir George B. Hunter, of Swan, Hunter & Wigham, Ltd., shipbuilders on the Tyne, had an excellent opportunity to study the various shipbuilding centers of this country. In a recent interview he made some important statements regarding the great development that is now taking place in the United States as regards shipbuilding, and how these yards are in the future going to actively and strenuously compete with British shipbuilding firms for the building of new ships.

His reference to the remarkably increased output which is now the feature of United States yards owing to the absence of restriction of trade union rules, is a topic which might, with advantage, be considered by British trade union officials.

Sir George said he had visited New York, Philadelphia, Washington, Halifax and Montreal, where he made a special visit to several of the shipyards in those places and found them busy and hard at work. Some of the yards were large and much up to date, and capable of doing both an enormous amount of work and doing it well.

What impressed the British shipbuilder as much as anything during his visit to the United States at the present time was the speed with which these shipyards could build large ships. He said they only required about half as long on the stocks between the laying of the keel and the launching of the constructed ship as those built in British yards. This was done although the men were only working one 8-hour shift per day, instead of working two and three shifts as they did during the war-time pressure, and was mainly due to the fact that they were not restricted in the employment of workmen to members of trade unions, and the workmen did not restrict the amount of work they did per day. He said he saw riveters working who were putting in three times as many rivets per day as riveters usually do in England and Scotland on similar work.

Install Crane at League Island

Largest Crane in the World Now in Operation—Has Lifting Capacity of 392 Tons—Represents \$1,000,000 Investment

THE largest crane in the world was formally christened "League Island" at the Philadelphia navy yard on Saturday, Dec. 6. The simple but unusual ceremony was performed by Miss Bertha Kaltenbach, Cleveland, a daughter of one of the officials of the McMyler-Interstate Co., Bedford, O., which built the crane for the government. As the bottle of champagne broke upon the forward block of the four lifts, the big machine hoisted four loads and swung them completely around the end of the new fitting-out dock. Demonstrating its capacity, the new crane carried a yard-locomotive on the extended arm, a second locomotive as a counterweight under the machine house, and two compound loads weighing 416,000 pounds each on the arm.

The big machine, designed to hasten the equipment of major vessels of the navy, is designed to lift 350 gross or 392 net tons. Its cost was approximately \$1,000,000, the contract price for the crane without the foundation being reputed to be \$865,000. The whole was

assembled and constructed in the yard upon the fitting-out dock which it serves. In building the crane, a specially constructed derrick with a 265-foot beam was used. Unlike the smaller capacity hammer-head, the revolving portion of this crane is supported by a structural steel octagonal pillar. This pillar tapers gradually from the bottom to the top and forms a support for the roller bearing which carries all of the rotating parts of the crane. The combined load is, therefore, carried upon a space the diameter of which is approximately only $4\frac{1}{4}$ feet, and upon $2\frac{1}{2}$ -inch roller

bearings. The revolving portion of the crane consists of a horizontal truss, the front portion of which supports the trackways carrying the main and auxiliary trolleys. The rear portion of the truss supports the machinery as well as the counterweight. The truss maintains its horizontal position by means of a structural steel frame or apron which encircles the pillar and extends down to a point near the portal. Steel rollers are mounted in a flexible pin-connected band at the bottom of the apron and come in contact with an annular roller path on the pillar.

The crane is equipped with two distinct main hoist units, each having a separate hoisting and trolley racking mechanism. Each main hoist has a maximum capacity of 175 gross tons and may be operated separately. To develop the maximum capacity of 350 gross tons, the two main hoists are operated jointly as a single unit through a mechanical and electrical coupling device.

The crane is operated entirely by

electricity and it is reputed to be simply controlled, being designed to be operated by two men if necessary. The machinery house on the rear cantilever is fitted with a crane runway of 42-foot centers. This crane runway supports a 35-ton electrically operated overhead traveling crane for handling the operating mechanism of the shipbuilding crane when necessary. The crane runway extends over the end of the rear cantilever, which enables the overhead traveling crane to raise or lower machinery parts.

Each main hoist is capable of lifting 175 gross tons and has a radius of 115 feet; acting together they can lift 350 gross tons with the same radius. Two 8-part lines are used on each main hoist, 32-part line being used to make the maximum lift of 350 gross tons. The auxiliary hoist, the lifting capacity of which is 50 gross tons, has a radius of 190 feet. The load is handled on two 4-part lines. The minimum operating radius of each hoist is 41 feet. Both main hoists, operating singly or

jointly, have a speed of 2.5 feet per minute carrying the maximum load or a speed of 10 feet per minute with no load. The auxiliary hoist is capable of a speed of 12 feet per minute with the maximum load or 30 feet per minute with no load. The sluing speed of the crane is one revolution in 12 minutes. The trolley racking speed of both main hoists, singly or jointly, is 12 feet per minute with the maximum load or 100 feet per minute with no load. The trolley racking speed of the auxiliary hoist is 100 feet per minute with the maximum load or 150 feet per minute with no load.



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MAMMOTH CRANE RECENTLY INSTALLED AT THE LEAGUE ISLAND NAVY YARD—IT LIFTS 350 TONS

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

H OPE of salvaging the schooners **CHARLES H. TRICKEY** and **MARY E. OLYS**, which piled up on the rocks at Goat island, Me., Jan. 1, was abandoned soon after the vessels struck. Heavy seas pounded them to pieces. Crews of both vessels were rescued.

Steamer **WILLPOLO**, which went ashore at Chatham, Mass., on Jan. 1, has been floated. The damage sustained was slight.

Motor lighter **SCOTIALITE** was totally destroyed by fire on Jan. 2, at St. Johns, N. F.

Steamer **SABINE SUN**, which returned to Marcus Hook with slight machinery trouble on Jan. 2, has been repaired and the vessel again put to sea.

A report from New Bedford, Mass., Jan. 2, states that the whaling schooner **ARTHUR V. S. WOODRUFF**, which sailed from that port early in November for the Cape Verde islands, has probably been lost.

Three-mast schooner **LAVINIA M. SNOW**, which went ashore late in December in the Bahamas, has been floated and will be repaired.

Steamer **LEXINGTON**, bound from Providence, R. I., to New York, recently went ashore off Larchmont, N. Y. Damage was slight and she was later refloated successfully.

Barge **CONEWAGO**, from Philadelphia to Boston, in tow of the tug **INTERNATIONAL**, was forced ashore off Sandy Hook by floating ice on Jan. 5. She was later pulled off without sustaining much damage.

Schooner **ANDORINHA**, New Orleans to Oporto, went ashore in entering the port of Leixoes. She was floated and made port leaking badly.

Steamer **HJORTNES**, from Nantes to Hampton Roads, was recently towed into Bona with her machinery out of order.

Steamer **Cuzco** (Italian), New York to Hong Kong, went ashore off Honolulu on Jan. 1.

Schooner **Eva** (Danish), from Fogo to Lisbon, returned to St. Johns, N. F., on Dec. 31 after encountering rough weather. She lost her jibboom and part of her bulwarks. Also it was ne-

cessary to jettison part of her cargo of codfish.

Shipping board steamer **EASTERN CROSS**, bound for Liverpool with a cargo of cotton, recently lost her rudder and wired for assistance.

Steamer **POLAR SEA**, from Buenos Aires for Falmouth, went ashore on Jan. 5 at Olinda, Brazil, near Pernambuco. She went broadside on the rocks.

Mexican oil tanker **SAN BERNADO**, from Mobile, Ala., to Tuxpan, Mex., went aground late in December off the Southwest Pass, La.

River steamboat **AMERICA**, largest sidewheeler on the Ohio and Mississippi rivers, was damaged by fire at Cincinnati, recently, while laying up for repairs. Damage amounted to \$5000.

Steamer **CORNUGOPIA**, from Portland, Me., to Genoa, reported late in December that she was making for Ponta Delgada with a disabled rudder.

Steamer **CRANESNEST**, from Norfolk, Va., put into Charleston, S. C., on Dec. 31 with engine trouble.

Schooner **ELEANOR A. PERCY**, from Rio Janeiro for Copenhagen, foundered at sea on Dec. 25. Five of her crew were picked up and landed at Swansea. The remainder are missing.

Fishing steamer **HOHENLINDEN**, which stranded on Barnegat shoal, was floated without assistance on Jan. 2. Her engines and steering gear are out of order. She has put into New York for repairs.

Work of salvaging the schooner **GILBERT STANCLIFFE**, which went ashore recently at North Haven, Me., has begun.

Schooner **CARL R. TIBBO** (British), which recently cleared from Change islands for Gibraltar with a cargo of fish, was wrecked at Rocky bay, Hamilton sound.

Steamer **LAGES** (Brazilian), from Philadelphia to Bordeaux, and the steamer **DALANA**, from Brixham for Baltimore, both put into St. Michaels, Azores, recently with machinery trouble.

Schooner **JEAN L. SUMMERVILLE**, which was adrift for several days in the Gulf of Mexico without a navigator,

her commander, Capt. W. E. Oram, having died, has made port at Mobile, Ala.

When the schooner **SUNBEAM** (Cuban) turned turtle off the Virginia capes late in December, two members of the crew and five Chinese stowaways were drowned. Coast guard cutter **MANNING** landed seven survivors of the **SUNBEAM**, including Captain Riverton, four members of the crew, two Chinese stowaways and the body of one Chinaman at Norfolk, Va.

Steamer **WYNOOCHE** went aground near Fort Wadsworth, N. Y., on Jan. 8 and was refloated without damage.

Steamer **CITY OF TOPEKA** lost her rudder while crossing Columbia river bar, Portland, Ore., on Jan. 2.

Steamer **OCTORARA**, from Bermuda to Norfolk, Va., in tow of the shipping board tug **BERMUDA**, broke adrift off Cape Hatteras. The tug proceeded to port for coal, abandoning the steamer.

Schooner **MALCOLM BAXTER JR.**, from Newport News, Va., to Santa Cruz, Arg., put in at Barbados leaking badly on Jan. 7. Also the schooner has lost several of her sails.

Steamer **CLAN MURDOCH** (British) from Chittagond to New York, put in at Bermuda, on Jan. 8, with her cargo afire.

Steamer **SORDELLO** (British), which went ashore at Rocby harbor, N. F., was successfully refloated. Damage sustained was not serious.

Steamer **SKOGHEIM** (Norwegian), from Gothenburg to Boston, sustained considerable damage to deck fittings, boats and rails during heavy weather throughout the voyage. She docked in Boston early in January.

Steamer **ANTON VAN DRIEL** (Belgian) was wrecked west of Cape Race on Dec. 29. The entire crew perished. The vessel's home port is Rotterdam.

Steamer **DUNDEE** of the Reid-Newfoundland line, went ashore at Noggin island in Notre Dame bay, late in December. Her entire crew and 42 passengers were taken off in safety by the steamer **CLYDE**.

Schooner **MATOWOC** recently took fire while docked at Staten island, N. Y. Fire was soon got under control and the damage sustained was slight.

Double Space For Show Exhibits

National Marine League Takes Additional Floor to Handle Displays Planned For Big Exposition at New York, April 12-17

IN CONNECTION with the national marine exposition to be held at the Grand Central Palace in New York in April under the auspices of the National Marine league, plans are being formulated for the celebration of "National Marine Week" throughout the country. The New York exposition will be the event of chief importance. The celebration will start with a luncheon on Monday, April 12, on board an American ship in the port of New York. In the evening the exposition will be opened by John Barton Payne, chairman of the United States shipping board.

The following day's plans call for the opening of an exhibit of marine art in a leading New York gallery, while in the evening will be held the ninth annual dinner of the National Marine league. Among Wednesday's features will be the launching of ships in Atlantic harbors by electricity from the Grand Central Palace. In the evening there will be dinners and meetings of shipbuilding and naval architects' societies in New York hotels. Thursday will be "Merchant Mariners' Day." Friday will be "Engineers' Day," and its most interesting event, the reading of papers on the exhibition of new marine inventions. On Saturday, New York will see a parade of men connected with the maritime industries and the various shipping lines in that port. A novel barge procession on the Hudson is also said to be under consideration. Saturday night will be "Insurance and Foreign Trade Night," and a dinner of insurance men and of the foreign trade interests will be held then.

Unusual Displays Promised

Some of the unusual exhibitions which are now being brought together include an extensive collection of ship models assembled by American collectors from all over the world. There will be a complete collection of maritime house flags, a comprehensive show of recent marine inventions, to which the navy department will make valuable contributions, an interesting demonstration on fuel oil and its work in the merchant marine, and exhibits from each important American port laid out on a novel geographic plan. The New York state nautical school will show

how boys can be made into efficient ships' officers.

To concentrate the attention of the whole country upon this exhibition, the National Marine league plans to call for the celebration of national marine week in all important cities of the country. The league has named this committee to take charge of such celebrations: New York, August Belmont, A. C. Bedford, George J. Baldwin, George A. Gaston, W. Averill Harriman, Edgar L. Marston, William Fellowes Morgan, Oscar L. Gubelman and Alexander J. Hemphill; from Chicago, R. T. Crane; from Toledo, John M. Willys, and from Seattle, D. E. Skinner and Frank Waterhouse. Additional committeemen are to be appointed. Capt. Felix Riesenbergs, seaman explorer, engineer and author, will be in executive charge of the program for the coming celebration and exposition.

Reinforced by the marine exposition, the National Marine league expects to direct all its influence during this one week of April to awaking the American people to the need of a greater appreciation of maritime ventures, and thereby bring the proper reaction on the United States congress for more intelligent legislative recognition.

Great Britain staged at the Olympia, in London, last October, a great maritime exposition lasting three weeks. The British later held a royal review of the men of the merchant fleet staging the event on the Thames to honor their war services. Seventy steamship lines had decorated barges in the line of parade. Canada has just raised a fund of up to \$5,000,000 for welfare and propaganda work for the Canadian merchant marine. Efforts are being made to bring the New York exposition up to a par with these.

The slogan adopted for the American campaign is: "American cargoes, and passengers to be carried in ships built, owned, operated and manned by Americans; ships classified and insured by American companies, equipped and repaired by American industry." To stimulate interest in this program the National Marine league plans to offer prizes in essay competitions in colleges. Contests for the best original poem or chantey commemorating the return of America

to the seas are in contemplation. Following the suggestion of E. N. Hurley, Charles Schwab and Chairman Payne, it is hoped to persuade the public "to think in terms of ships."

In indorsing the plans for national marine week, Chairman Payne said:

"The plan of the National Marine league for a series of public demonstrations to focus public attention upon the American merchant marine and the possibilities that lie in its development is one that must meet with the cordial approval and support of all who realize the importance of ships to our domestic industries.

"Once more we have a real American merchant fleet. But it was built under the urge of war. If we intend to keep our place on the seas we must unite for teamwork and not allow indifference to overcome the splendid start that has been made. It is our hour of opportunity. I bid you speed and success in your plan"

A Great Exhibit

Attention will, very naturally, center in the New York exposition concerning which the promoters promise some startling and impressive features. This is the first exposition of this nature held in the United States within 20 years. So great has been the demand for exhibit space within the first few weeks after the announcement of the plan that doubling of estimated floor space has been necessitated. The exhibit will be chiefly of shipbuilding, operating, equipment and engineering firms of the maritime industries. Besides graphic exhibits depicting the progress of the American maritime industries, special films will be shown and a series of unusual lectures arranged.

For the dinners and public demonstrations to be held in New York, the league has arranged for some national figures to deliver addresses. Among these, it is expected, will be Chairman Payne of the shipping board, and Hon. Joshua Alexander, secretary of commerce. The exhibit at the Grand Central Palace will feature steamship lines, shipbuilding, ship chandlery, port equipment and loading facilities, marine engineering, training officers and men to operate American ships, marine insurance companies and banks engaged in financing foreign trade.

Equipment Used Afloat, Ashore

Outfit Using Sand and Steel Grit Under Air Pressure
Cleans Ship Exteriors and Interiors—Navigational Sextant

DUE to the fact that steel quickly rusts when exposed to the action of the elements, the problem of prolonging the life of a vessel by sealing its steel parts against rust is one of the most serious with which the vessel owner has to contend. Steel properly protected from air and water will never rust. This is a foregone conclusion, but the chief difficulty lies in getting the paint or other coating to remain in place on steel surfaces. Once the paint peels off, rust sets in rapidly and is only a question of time until the plates or frames require repainting and possibly renewing.

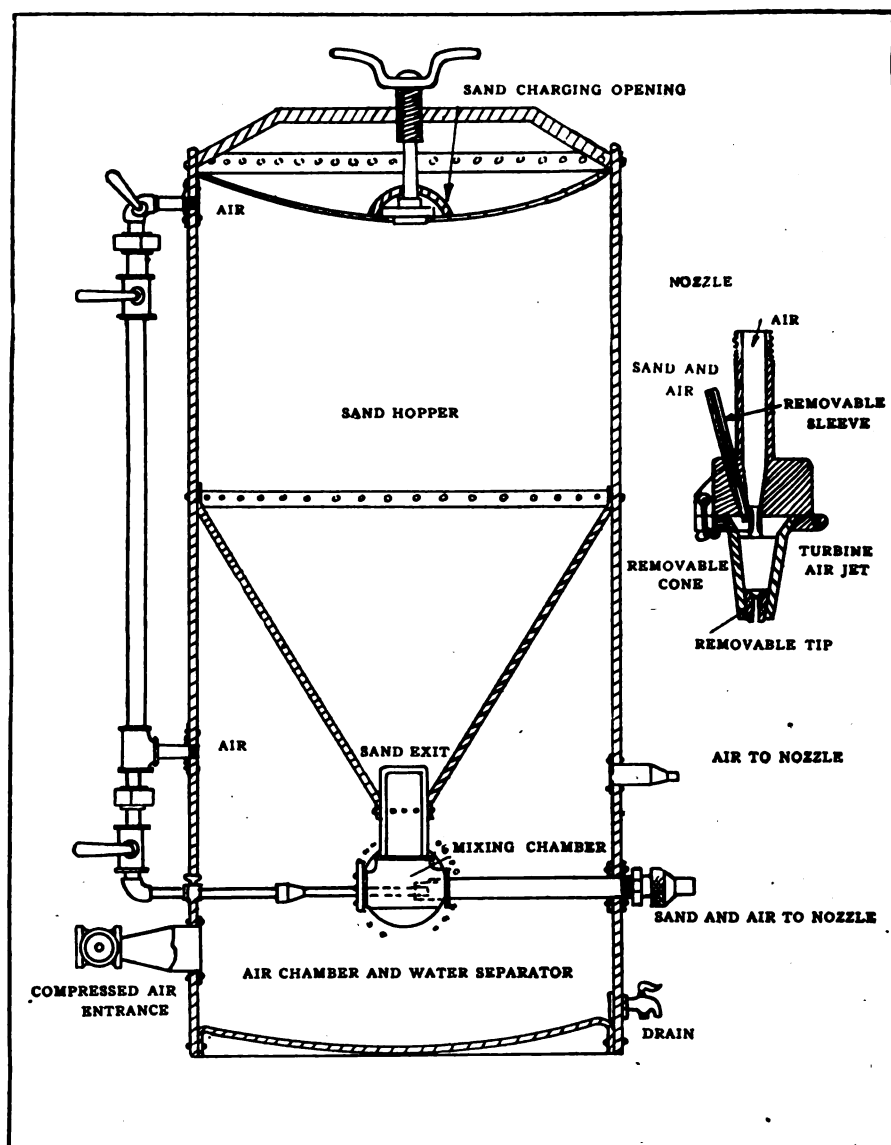
The commonly accepted method of preparing a vessel's hull for painting is to scrape the surface clean by hand labor. This is an expensive procedure at best and the results are not always satisfactory. With hand scrapers, wire brushes, etc., it is impossible for the workman to reach cracks and crevices. In these remote places, rust does its greatest damage. For preparing surfaces of steel vessels for painting, the American Steel Cleaning Co., Cleveland, has designed a high-pressure sand blast outfit. The device used is shown in the accompanying illustration. It consists of a strong steel tank, divided into two compartments, the upper being the sand hopper and the lower the air chamber. Air is admitted through the opening at the left. Pressure causes the air to flow through the bypass pipe at the left and into the sand hopper. Thus

the sand is forced into the mixing chamber where it meets a jet of air that forces it out through the opening at the right. This opening is connected to the nozzle by a hose. Air is also carried to the nozzle by another hose. By referring to the sectional view of the nozzle, it is clear that sand never passes through the main air opening. Thus, as this opening is free from wear, the pressure directing the blast remains constant. The parts subjected to wear, that is, the tip in the end of the nozzle and the sleeve through which the sand and air pass, are removable. This is necessary as these parts are subjected to constant abrasive action. The sand hopper is filled at the top. As a certain amount of water is

always present with compressed air, provision has been made to take care of it. Water settles at the bottom of the air chamber from which it is drawn off by means of the drain cock at the right.

The device is operated by two men, a nozzle man and a helper. The nozzle man directs the blast while the helper keeps the hopper filled with sand, draws off the water, sees that the proper air pressure is being maintained, etc. Compressed air is provided by means of an air compressor driven by an electric motor. Usually, the outfit is mounted as a self-contained unit on skids or on a wheeled truck.

The process is utilized for two distinct purposes, cleaning vessels previously to applying the initial coat of red lead, which prefaces all painting operations, and scaling vessels that need repainting. When working on the outside of a vessel, sand is the abrasive medium used. Sharp quartz sand, that has passed through a 10-mesh screen has been found to be the most efficient. In cleaning the inside portions of vessels, it is not practicable to use sand, due to the fact that a large amount of objectionable dust is raised. A material called steel grit is used. This is a product of the Pittsburgh Crushed Steel Co. It is made of crucible steel, subjected to a heat-treating operation after which it is crushed and graded. A large amount of this material can be collected after use, screened to remove the dirt



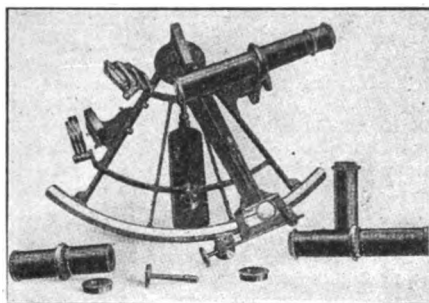
CROSS SECTION OF SAND BLAST DEVICE USED IN CLEANING SHIPS

and used over again. In comparing the work done by hand with the result of the sand blasting method, a striking contrast is shown. One man by hand scraping can clean approximately three square yards in one day of nine hours. These figures are based on hull cleaning contracts at the port of London, where a large amount of this work is done. With the sand blasting method, one man and a helper can clean four square yards an hour or 36 square yards per day of nine hours.

Among some typical recent cleaning jobs done by the American company are the vessels MASSACHUSETTS and BUNKER HILL, at the William Cramp & Sons Ship & Engine Building Co., Philadelphia, and the WILLIAM F. FITCH of the M. A. Hanna & Co. fleet. With the MASSACHUSETTS and the BUNKER HILL, the work consisted of removing paint and hull cement. The Cramp yard reported that the plates were rendered as clean as though they had been pickled. With the FITCH, the whole interior of the hull, with the exception of the machinery space, was cleaned. In this case, the Hanna company reported that the interior of the vessel was as clean and bright as though the frames and plates were planished steel

Navigational Sextant

The sextant shown in the accompanying illustration is an American made unit, a product of Brandis & Sons, Inc., Brooklyn, N. Y. It has a 7½-inch radius. The arc is solid silver, graduated to 10 minutes from 0 to 160 degrees. The vernier reads to 10 seconds which permits of close readings. The instrument has



AMERICAN MADE NAVIGATIONAL SEXTANT

a measured capacity up to 145 degrees.

The tubing used in the telescopes is hard drawn brass, the other metal parts being bronze. The frame is cross ribbed to insure stiffness with a minimum of weight. The optical glasses and mirrors are ground from

crown and flint glass, while the shade glasses are in the usual dark, medium and light reds and greens. The instrument is furnished with two neutral eyecaps, one adjusting key and two screw drivers, all packed in a mahogany case.

The company draws attention to the fact that its entire plant was devoted to the manufacture of sextants during the war, the whole output going to the United States navy. Prior to the war, the output of American made sextants never exceeded 200 yearly. With the entrance of the United States into the war and the resultant upbuilding of an American merchant marine, sextant manufacturers expanded their facilities to meet the increased demand. In less than two years, the Brandis company delivered 2400 sextants to the United States navy.

Aside from the type of sextant illustrated, the company manufactures a 6-inch sextant, similar to the 7½-inch instrument with the exception that the arc radius is 6 inches; a mate's sextant, which is a simple instrument, and a power boat sextant designed as a compact unit for use in coastwise work.

Business News for the Marine Trade

The United States Transport Co. of New York, has established a Philadelphia service.

The Government will award contracts for dredging the Hudson river channel.

The Vulcan Welding Co., Akron, O., recently increased its capital stock from \$50,000 to \$100,000.

The Oriental Navigation Corp. recently placed contracts with the Todd Shipyards Corp., for two small fruit steamers.

Early this year the Southern Shipyards Corp. expects to complete the additional facilities it has been constructing at Newport News, Va.

The Philadelphia department of wharves, docks and ferries, is having plans prepared for alterations to pier 19. E.D.s will be taken soon.

The Broomsey Rotary Plunger Pump Co., Inc., Bath, Me., recently was incorporated with \$100,000 capital.

The Neptune Ship Supply Co., New York, has been incorporated with \$20,000 capital, by S. J. Bethauer, S. and S. Kahn, 2051 Fifth avenue.

The Murren Shipbuilding Corp., Mobile, Ala., has a contract to build 10 barges for the government, to be used at Muncie shoals, near Florence, Ala.

The Marine Mortgage Corp. recently was chartered in Delaware by M. L. Harty, M. C. Kelley and S. L. Mackey, with \$500,000 capital.

The Gazelle Towing Corp., New York, recently was incorporated with \$10,000 capital, by W. B. and C. M. Craig and J. Williams.

The Simpson Patent Dry Dock Co., Boston, recently awarded contracts for erecting an engine house and repair shop.

The Walter H. Moreton Corp., Boston, has been incorporated to build boats, machines and motors, with \$100,000 capital, by Chauncey W. Hood, Maurice H. Brotherton, Walter H. Moreton, Quincy, Mass.;

Chester T. Marshall, West Somerville, Mass.; and James A. Moreton, Allston, Mass.

The Barbara Bros., Tacoma, Wash., shipbuilders, are reported contemplating the construction of a ship-

New Offices

C. V. Thavenot and Harry Quirk have established a ship brokerage business with offices at No. 1 Broadway, New York.

The Refrigeration Engineering Co., Toledo, O., has opened an office in Denver, Colo., at 1425 Sixteenth street, with Maurice A. Nettleton in charge.

The Sizer Forge Co., Buffalo, has opened a district sales office in Detroit, 459 Book building, with L. D. Stanton in charge.

Offices have been opened in the Old South building, Boston, by the Bethlehem Shipping Corp., who will act as general freight forwarder, ship broker and steamship agent. F. E. Sorenson, formerly vice president of the Globe Forwarding Co., New York, is manager.

Manning & Gray is the name of a new import and export house, which has opened offices at 9 Church street, New York. It was formed by John A. Manning and Charles J. Gray. Mr. Manning formerly was connected with the Kenny Warehouse Co. and the Acme Export & Import Co.

The Saul-Noble Co., 50 Church street, New York, recently was formed by Thomas D. Saul and James H. Noble, to engage in business as foreign freight contractor and forwarder.

building plant to be devoted to building wooden vessels.

The Campbell Co., Inc., Rutherford, N. J., was recently incorporated with \$25,000 capital to manufacture and deal in boilers. Incorporators are William Bell, Collin Campbell and F. W. Conklin.

The Seitate harbor improvement committee, Seitate, Mass., has prepared a report asking the state waterway committee to appropriate funds for dredging the port, so that large vessels can be accommodated.

All destroyer repair work in the North Atlantic district, together with submarine repair work, is to be done in the future at the Squantum plant of the Bethlehem Shipbuilding Corp., Quincy, Mass.

Repairs to the foundations of the burned buildings at the plant of George Lawley & Son, Neponset, Mass., have been started, by the Aberthaw Construction Co., Boston, which has the contract.

Capitalized at \$150,000, the European Steamship Line, Inc., recently was incorporated in Delaware, by S. B. Howard, George V. Reilly and Robert K. Thistle.

The Harbor Service Corp. recently was incorporated with \$100,000 capital to acquire dock and maritime rights, by T. L. Croteau, P. B. Drew and H. E. Knox, Wilmington, Del.

L. H. Monks, 120 Broadway, New York, has been appointed representative of W. A. Harriman & Co., shipbuilding, a Delaware corporation which is capitalized at \$15,000.

Goethals, Willford & Boyd, Inc., ship supplies, have been incorporated in Delaware, with 50,000 shares of common stock. They are represented by H. R. Willford, 17 State street, New York.

The Federal Shipbuilding Co., Kearny, N. J., is erecting extensions to five of its 12 shipways, which will permit building vessels up to 500 feet in

length. The company is also making extensions to its copper, sheet metal and pipe fitting shops.

Capitalized at \$15,000, the American Sillmaking Corp., Brooklyn, N. Y., recently was incorporated by H. I. Wandmaker, G. H. Burtis and W. R. Murphy, 189 Montague street, Brooklyn, N. Y.

The Atlantic Marine and Construction Co. recently was incorporated with \$2,000,000 capital, by Herbert S. Bain, Chestia F. Bloock and James Downsey, all of New York.

The Burnham Boiler Corp., Irvington, N. Y., has been incorporated with \$1,000,000 capital, by H. I. Vanderbilt, C. H. Seifert and O. F. P. Korb, 1824 Wallace avenue.

The National Oil Transport Co., Portland, Me., has been incorporated to build barges, ships, etc., with \$1,000,000 capital, by R. I. Johnson, H. I. Smith and A. B. Farnham.

Plans are reported being prepared by the Cunard Steamship Co., New York, for the erection of a terminal on the Jersey side of the Hudson river, to be built at an estimated cost of \$20,000,000.

Capitalized at \$25,000, the Boston Merchant Marine Sealing Co., Boston, recently was incorporated to repair vessels, ships and boats, by John J. Collins, Ralph C. Christensen and S. J. Christensen.

S. M. Louis, T. M. Constable and F. J. Nolan, 216 President street, Brooklyn, N. Y., recently were named as the incorporators of the Standard Ship Repair Co., New York.

The Delaware Shipbuilding & Repair Co., Camden, N. J., is reported planning to erect a machine shop, one story, 25 x 100 feet, to be built at an estimated cost of \$50,000.

A. H. Grebe & Co., Richmond Hill, N. Y., recently was incorporated to make wireless instruments, etc., with \$50,000 capital, by D. Rigny, L. G. Pacent and A. H. Grebe.

The Sun Shipbuilding Co., Chester, Pa., has let contracts for the erection of two new shipways. The cranes are to be furnished by Pawling & Hamischfeger, and the steel by the Belmont Iron Works.

Five and a half acres have been purchased by the Wright Aeronautical Corp. of America at Newark, N. J., as a site for a plant to be devoted to the manufacture of motors and planes.

Capitalized at \$50,000, the Darrow Steel Boat Co., Albion, Mich., recently was incorporated by F. H. Darrow and others.

The Union Welding Co., Detroit, recently was incorporated with \$16,000 capital, by Samuel Stalhopulas, 842 West Jefferson avenue, and others, to engage in a general metal welding business.

The city of Baltimore contemplates the erection of a pier at the foot of McComas street, to be built at an estimated cost of \$300,000. B. F. Harrison is engineer in charge.

The Oscar Daniels Co., Tampa, Fla., will build a 11,900-ton steel tanker for the Standard Oil Co. of New York. The company is completing the sixth vessel, a 9500-ton freighter, for the Emergency Fleet Corp.

To engage in shipbuilding in all its branches, the Boston Maritime Corp., Kittery, Me., recently was incorporated with \$2,000,000 capital. The incorporators are Harry W. Foster, George E. Burnham and Elmer J. Burnham.

The General Electric Co., Gloucester, Mass., has taken over a 3-story building owned by Joseph Rowe, and will use it to coil the wires on generators and motors, and will use the seven acres recently acquired, as a site for a forging plant.

The Simplicity Valve Co., Boston, recently was incorporated with \$200,000 capital, by Charles J. Reynolds, Melrose, Mass.; Stanley L. Reade, Cambridge, Mass.; and Charles E. Conant, Newtonville, Mass.

The Lloyd-Italo American Steamship Co. has been incorporated with \$1,000,000 capital, by Gabriel Stahle, Somerville, Mass., Joseph Pistorino, West Medford, Mass., Michael Lynnes, Chelsea, Mass., Luigi McCollai, New York, and Dominico Pace, Brooklyn, N. Y.

The United States Shipping Board Emergency Fleet Corp., 140 North Broad street, Philadelphia, has asked for bids for the purchase of the real estate, buildings, machinery and equipment of the Richmond Boiler Works, Richmond, Va. The site consists of 52 acres, the main building is 160 x 600 feet, with

a power house, 40 x 180 feet, locomotive house, 30 x 50 feet, and a number of other buildings.

The Union Shipbuilding Co., Baltimore, will shortly commence construction of a railway drydock capable of drydocking vessels up to 4000 tons displacement. This dock will be constructed of timber, will measure 360 feet over keel blocks and will have a draft of 20 feet over the blocks.

The Metal Hose & Tubing Co., 253 Tillary street, Brooklyn, N. Y., has awarded a contract to the Buks Bros. Construction Co., 62 West Forty-fifth street, New York, for the erection of a 3-story plant, 98 x 102 feet, at Raymond street and Park avenue, to be built at an estimated cost of \$150,000.

The National Concrete Boat Co. is being reorganized as the Norfolk Construction & Marine Repair Corp., with offices at 208 Water street, Norfolk, Va., and plans are now being prepared for the installation of three marine railways and launching ways for concrete barges. It is expected construction work will be started shortly.

The Baltimore Dry Docks & Ship Building Co. recently was awarded a contract to make repairs to the U. S. S. AEOLUS, formerly the German liner GROSSER KURFURST. The contract involves approximately \$1,750,000. The AEOLUS will be converted at New York into an oil-burning vessel and will be sent to Baltimore for completion.

The Centrifugal Pump Co., Inc., 434 Canal street, New York, has increased its capital stock to \$25,000, and has taken over the business of S. B. Wetton & Co. It will continue the manufacture of centrifugal pumps as in the past, but on a larger scale. At present the company is ascertaining what new material and equipment is needed.

The Nilson Yacht Building Co., Baltimore, has been organized with \$50,000 capital to build yachts. L. J. Nilson is president. The office of the company is at 2005 East Thirtieth street, Baltimore. Plans are being prepared for erecting a joiner and machine shop and three marine railways for small craft. A wharf will also be built.

The Joseph McGee Iron & Brass Foundry Co. and the Russell Foundry & Machine Works, both of Long Island, N. Y., have consolidated and in the future will be known as the McGee-Russell Founders & Machinists Co. The new company is capitalized at \$60,000 and was incorporated by F. and J. M. Russell and M. M. Storm, 323 Twenty-fifth street, Brooklyn, N. Y.

The Charleston Dry Dock & Machine Co., Charleston, S. C., has been formed with a capital of \$2,500,000, to take over and operate the plant of the Vail-Murdoch Co. It is reported planning to erect several additions, including a boiler shop, machine shop and foundry. W. R. Bonsal is president and Charles Vail, vice president.

H. Victor Crawford, I. W. Boner and John W. Crandall, all of New York, were named as the incorporators of the Glendoyle Steamship Corp., which was recently chartered in Delaware with \$800,000

capital. The same men were named as incorporators of the Glendola Steamship Corp., capitalized at \$800,000, and the Glyndon Steamship Corp., also capitalized at \$800,000.

The George A. Fuller Co., New York, has announced the purchase of a shipbuilding plant in Wilmington, N. C., which was built under an agency contract with the Emergency Fleet corporation. The Fuller Co., however, will not assume control until after the government contract has been completed. The yard was built at an estimated cost of \$3,500,000, and has been operated through the Carolina Shipbuilding Corp.

Fairbanks, Morse & Co., Beloit, Wis., have had plans prepared for erecting a large modern foundry, which, when completed, will be 550 x 900 feet, and will contain approximately 495,000 square feet of floor space. The capacity will be from 350 to 400 tons of gray iron daily. The foundry will be equipped with up to date machinery and modern conveniences for employees will be installed. Actual construction is not expected to be started before the spring.

The Bayles Shipyard, Inc., Port Jefferson, L. I., acquired some time ago by the Emergency Fleet corporation, has been purchased by Arthur Allen for a consideration of \$2,225,500. The yard has an area of 7½ acres with facilities for the construction of steel vessels up to 5000 tons capacity. Mr. Allen has been connected with the shipping board as assistant to Robert L. Hague. It is understood he will act as manager at the yard.

Willard, Sutherland & Co., Inc., Maritime building, New York, bunkering contractors, recently were incorporated, as a further development of their business which was organized in 1905. Besides having offices in New York, Philadelphia, Baltimore, Newport News and Norfolk, Va., the company are American representatives of important coal interests at ports throughout the world. They have recently added to their connections a line of fuel oil depots. Officers are: President, Le Baron S. Willard; vice president, John E. Sutherland; treasurer, Frank Stocks, and secretary, Henry W. Goddard.

Beginning the first of the year, the sales and contracting business carried on by the General Fire Extinguisher Co., Providence, R. I., was taken over by the Grinnell Co., Inc., Providence, a newly organized company. The change was made because the name of the former company so specifically described the automatic fire protection section of the firm's business that it prevented any natural assumption on the part of the public that the company was engaged in several closely related lines of business. The related lines taken over by the Grinnell Co. are, fire protection, power and process piping, steam, hot water and gas heating, drying and the sale of pipe, fittings, valves and supplies. The Grinnell Co. will maintain engineering and construction service in the field of industrial piping, including sprinkler, heating, power and drying work and sales service in material for all such equipments.

New Trade Publications

VALVES.—The Nelson Valve Co., Philadelphia, is issuing an illustrated 156-page catalog describing its valves. The list includes bronze, iron and steel valves in gate, globe, check and nonreturn patterns for a diversity of installations. The illustrations show both sectional and outline views of the valves. A comprehensive description of each unit is included together with much technical information.

LEAKPROOFING BOATS.—L. W. Ferdinand & Co., Boston, have issued a booklet giving explicit directions for the use of their marine glue in making small boats leakproof. This material is applied in a heated state after which a coating of canvas is placed in position. It is said that the glue makes the canvas hard and durable permitting the boat to be used for many seasons without developing leaks.

MARINE HARDWARE.—The William V. Dee Co., Bridgeport, Conn., recently issued an illustrated catalog

devoted to marine hull fittings. These include skylight manipulating devices, toggle pins, watertight doors, hinges, airports, fixed lights, airport screens, wooden tackle blocks, pneumatic painting equipment and marine oil engines. The various articles are fully described while a double-page line drawing gives full working and installation details of the watertight doors.

SOOT BLOWERS.—Under the title: "How Some Shipowners Have Increased Their Profits," the Diamond Power Specialty Co., Detroit, has issued an attractive, illustrated booklet which describes in detail its soot-blowing equipment. Much valuable technical information regarding marine boiler operation is given, illustrated by graphic charts and drawings. The relation of boiler efficiency to coal consumption and to steaming radius and of soot to boiler efficiency is discussed. The company's apparatus is fully described while a number of illustrations show practical installations.